#### Work Order No. 15730.001.008

Pulp Dryer, No. 3 Paper Machine Vents, No. 2 and 3 Smelt Dissolving Tank Vents, and No. 1 and 2 Combination Boilers Emission Test Report New-Indy Catawba, LLC Catawba, South Carolina Test Dates: 21-27 June 2021

Prepared For

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**1 October 2021** 

## WESTON SOLUTIONS, INC. (WESTON®) INTEGRATED AIR SERVICES – AUBURN OPERATIONS ACCREDITATION STIPULATION

**Laboratory:** Weston Solutions, Inc.

Accreditor(s): Louisiana Environmental Laboratory Accreditation

Program (LELAP) - Laboratory and Emission Testing Practice

**Accreditation ID:** LELAP – 03024

Scope: Total Reduced Sulfur and Sulfur Dioxide

Sampling and Analysis

Effective: LELAP – 21 December 2001

**Renewal Date:** LELAP – 30 June 2022

#### **Data Qualifiers**



The following are general reporting notes that are applicable to all WESTON reports, unless otherwise noted.

- NL denotes data that was not from a LELAP accredited method.
- LNL denotes lab results that are not from an accredited LELAP laboratory.
- NN denotes data that was not from The NELAC Institute (TNI) accredited method.
- NNL denotes lab results that are not from an accredited TNI laboratory.
- **ED** denotes data that is not to be used for compliance purposes and may deviate from approved procedures.
- Q denotes data whose QA/QC check did not fall within the specified range. This data is still considered valid.
- A denotes data that is anomalously high with no explanation for the outlier.
- **BDL** denotes values that were below the limit of detection of the analyzer and 2% of the span gas was used to calculate an emission rate.
- **DF** denotes a dilution factor.
- NAP denotes emission testing performed by personnel from a non-TNI accredited laboratory.
- S denotes analysis that has been subcontracted.
- All values are reported on a "dry" basis, unless otherwise designated as "actual" or "wet" basis.



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### SECTION 1 INTRODUCTION

Weston Solutions, Inc. (WESTON®) was contracted by New-Indy Catawba, LLC (NIC) to conduct emission testing on the Pulp Dryer, No. 3 Paper Machine Vents, No. 2 and 3 Smelt Dissolving Tank Vents (SDTV), and No. 2 and 3 Combination Boilers (CB) at the NIC mill in Catawba, South Carolina. The purpose of the testing was to document the emissions from sources identified in Condition No. 5 (Order to Correct Undesirable Level of Air Contaminants) issued by the South Carolina Department of Health and Environmental Control (SC DHEC).

WESTON performed the emission testing during 21-27 June 2021. The project team included the following individuals.

Name	Project Role
Wayne Roberts	Project Manager/Test Team Leader (Team 2)
Van Dubay	Test Team Leader (Team 1)
Tyler Robinson	Test Team Member (Team 1)
Cory Lestochi	Test Team Member (Team 1)
Bryan Alldredge	Test Team Member (Team 2)
Brock Ennis	Test Team Member (Team 2)
Templeton Simpkins	Test Team Member
Chris Hartsky	Test Team Member (Liquid Sample Collection)
Natalie Hammonds	Quality Assurance Manager
Ashley Bryant	Report Coordinator

Mr. Dan Mallett of NIC coordinated the testing with mill operations and served as WESTON's technical contact throughout the effort. Mr. David Monroe of SC DHEC was present during the testing on 22, 23, and 26 June 2021. Mr. James Justice of SC DHEC was present during the testing on 22-26 June 2021. Mr. Derek Williams of SC DHEC was present during the testing on 27 June 2021.

The Louisiana Environmental Laboratory Accreditation Program (LELAP) is the accrediting body through which WESTON obtains both its LELAP and TNI accreditations. WESTON is accredited for operations in the states of Texas, Florida, and Virginia through reciprocity agreements with LELAP.



### SECTION 2 RESULTS AND DISCUSSION

The test program was to be completed between 15 June 2021 and 30 June 2021 as described in Condition 5. A WESTON test team conducted cyclonic flow checks on the No. 3 Paper Machine Vents on 15 June 2021. Stack extensions were installed on all vents to meet Method 1 criteria. All vents were determined to be noncyclonic and suitable for testing.

WESTON utilized two separate mobile laboratories and two separate test teams to complete the scope of work within the described timeline. The two teams traveled to NIC on 21 June 2021 and set up all the necessary equipment for testing. Team 1 was located on the No. 1 and 2 CBs with Team 2 located at the Paper Machine. Testing was scheduled to begin on 22 June 2021 but was delayed due to issues with the pulp mill that resulted in plugging of the process lines during the evening of 21 June 2021. Mill operations were back under normal operations on 23 June 2021, and testing was initiated. Team 1 conducted sulfur dioxide (SO<sub>2</sub>) and total reduced sulfur (TRS) measurements on CB1 operating with non-condensable gases (NCG) and stripper off gases (SOG) in the boiler followed by Condition 2, which consisted of three more sample runs with only the NCGs in CB1. Team 2 conducted testing on Paper Machine Vent 1. After reviewing the flow data collected on 23 June with the cyclonic flow data collected on 15 June, it was apparent that there was an issue with the fan on the No. 1 Paper Machine. Mill maintenance personnel verified that the belts on No. 1 and No. 2 Paper Machine Vents were damaged. The belts were replaced, and the No. 1 Paper Machine Vent testing was rescheduled for later in the week. The data collected on the No. 1 Paper Machine Vent (6-23-21) has been included in Appendix D for reference only.

On 24 June 2021, Test Team 1 conducted SO<sub>2</sub> and TRS measurements on CB2 while burning both the NCG and SOG gases. Test Team 2 started testing on the Paper Machine Vent 3 conducting three TRS sample runs. After completing Paper Machine Vent 3, the team moved to Paper Machine Vent 2 and conducted three one-hour TRS sample runs. It was determined through multiple discussions that the Paper Machine had a total of 7 vents rather than the 6 vents previously included in the scope of work and test plan. The 7 Paper Machine Vents are designated as Vents 1, 2, 3, 4, 6, 7, and 8. Adjustments were made to the schedule to sample all 7 vents.

On 25 June 2021, Test Team 1 conducted SO<sub>2</sub> and TRS measurements on CB2 while burning NCG gases only. Test Team 2 started testing on Paper Machine Vent 1 followed by Paper Machine Vent 4 and finally Paper Machine Vent 6. Three one-hour TRS sample runs were conducted on each vent.



On 26 June 2021, Test Team 1 conducted TRS measurements on the Pulp Dryer following the installation of the stack extension and scaffold. A cyclonic flow determination was conducted prior to the start of testing, and the stack was determined to be noncyclonic. Test Team 2 started testing on Paper Machine Vent 7 followed by Paper Machine Vent 8.

On 27 June 2021, Test Team 1 conducted TRS measurements on the No. 2 and 3 Combined SDTVs. All Paper Machine testing had been completed and verified as accurate.

Although cyclonic flow checks had been conducted on all the Paper Machine Vents prior to the start of testing, a second cyclonic flow check was conducted on the day of testing for each vent. The TRS concentrations on all Paper Machine Vents were less than 1 ppm. Volumetric flow rate (VFR) measurements were conducted using a Method 5 train with a heated probe, heated filter, and a cold box. A full 16-point traverse was conducted on each vent. Gravimetric measurements were conducted on each impinger before and after each run. Volumetric flow rate run time was set at 48 minutes for all flow measurements conducted simultaneously with the 60-minute TRS measurement to allow time for port changes and leak checks.

Cyclonic flow checks were also conducted prior to the start of testing on CB1, CB2, Pulp Dryer, and the SDTV. Volumetric flow rate measurements were conducted using a Method 5 train with a heated probe, heated filter, and a cold box. Gravimetric measurements were conducted on each impinger before and after each run. The VFR run time was set at 48-60 minutes for all flow measurements conducted simultaneously with the pollutant measurement.

Water samples were also collected by NIC personnel during 24-26 June 2021. These samples were analyzed by ALS Environmental at their Simi Valley, California laboratory. The samples were analyzed for five sulfur compounds using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). The laboratory report can be found in Appendix G.

All testing proceeded as planned. The test teams coordinated with mill operations to ensure each process was operating at normal operating rates. Process data is included in Appendix H to document the operating rate for each source.

Table 2-1 provides a summary of the mean emission results for each source. Tables 2-2 through 2-14 provide detailed summaries of the emission results. Tables 2-15 through 2-18 provide detailed summaries of the water sample test results. Measurement uncertainty is not shown but has been taken into consideration during method development. Any differences between the calculated results presented in the appendices and the results reported in the summary tables are due to rounding for presentation.



As requested by the SC DHEC, the TRS results have been calculated to include the full detection limit for any compounds (H<sub>2</sub>S, MeSH, DMS, and DMDS) that were below detection. The TRS results presented in the first report submittal considered any numbers below detection as zero. The initial TRS run data and the updated TRS run data are both included in the Field Data Appendices for a reference.

TABLE 2-1
SUMMARY OF MEAN EMISSION RESULTS

Source/Parameter	Mean Test Value
Pulp Dryer  Hydrogen Sulfide, lb/hr  Total Reduced Sulfur, lb/hr	0.02 0.23
No. 3 Paper Machine Vent 1 Hydrogen Sulfide, lb/hr Total Reduced Sulfur, lb/hr	0.04 0.12
No. 3 Paper Machine Vent 2 Hydrogen Sulfide, lb/hr Total Reduced Sulfur, lb/hr	0.07 0.22
No. 3 Paper Machine Vent 3 Hydrogen Sulfide, lb/hr Total Reduced Sulfur, lb/hr	0.09 0.26
No. 3 Paper Machine Vent 4 Hydrogen Sulfide, lb/hr Total Reduced Sulfur, lb/hr	0.04 0.12
No. 3 Paper Machine Vent 6 Hydrogen Sulfide, lb/hr Total Reduced Sulfur, lb/hr	0.05 0.16
No. 3 Paper Machine Vent 7 Hydrogen Sulfide, lb/hr Total Reduced Sulfur, lb/hr	0.04 0.18
No. 3 Paper Machine Vent 8 Hydrogen Sulfide, lb/hr Total Reduced Sulfur, lb/hr	0.04 0.21
No. 2 and 3 Smelt Dissolving Tank Vents Hydrogen Sulfide, lb/hr Total Reduced Sulfur, lb/hr	0.94 1.14
No. 1 Combination Boiler (Condition 1: NCG & SOG Gases)  Hydrogen Sulfide, lb/hr  Total Reduced Sulfur, lb/hr  Sulfur Dioxide, lb/hr	0.07 0.75 360.9
No. 1 Combination Boiler (Condition 2: NCG Gases Only) Hydrogen Sulfide, lb/hr Total Reduced Sulfur, lb/hr Sulfur Dioxide, lb/hr	0.05 0.68 436.1
No. 2 Combination Boiler (Condition 1: NCG & SOG Gases) Hydrogen Sulfide, lb/hr Total Reduced Sulfur, lb/hr Sulfur Dioxide, lb/hr	0.07 0.85 504.0
No. 2 Combination Boiler (Condition 2: NCG Gases Only)  Hydrogen Sulfide, lb/hr  Total Reduced Sulfur, lb/hr  Sulfur Dioxide, lb/hr	0.04 0.92 376.4



Table 2-2  $Pulp\ Dryer$  Summary of  $H_2S$  and Total TRS Emission Results

	Run 1	Run 2	Run 3	Mean
Date	6/26/21	6/26/21	6/26/21	
Time Began	1230	1347	1506	an 140 AM 400
Time Ended	1339	1454	1611	
Stack Gas Data				
Temperature, °F	158	159	158	158
Velocity, ft/sec	43	44	44	43
Moisture, %	7.8	11	9.2	9.2
CO <sub>2</sub> Concentration, %	0.0	0.0	0.0	0.0
O <sub>2</sub> Concentration, %	20.8	20.9	20.9	20.9
VFR, x 10 <sup>4</sup> dscfm	3.93	3.90	3.97	3.93
Hydrogen Sulfide				
Concentration, ppm	0.09	0.08	0.07	0.08
Emission Rate, lb/hr	0.02	0.02	0.02	0.02
Total Reduced Sulfur				
Concentration, ppm	1.18	1.09	1.06	1.11
Emission Rate, lb/hr	0.25	0.23	0.22	0.23

TABLE 2-3
NO. 3 PAPER MACHINE VENT 1
SUMMARY OF H<sub>2</sub>S AND TOTAL TRS Emission Results

	Run 1	Run 2	Run 3	Mean
Date	6/25/21	6/25/21	6/25/21	
Time Began	0755	0900	1005	
Time Ended	0855	1000	1105	
Stack Gas Data				
Temperature, °F	171	172	173	172
Velocity, ft/sec	64	63	63	63
Moisture, %	19	19	18	19
CO <sub>2</sub> Concentration, %	0.2	0.2	0.2	0.2
O <sub>2</sub> Concentration, %	20.2	20.2	20.2	20.2
VFR, x 10 <sup>4</sup> dscfm	3.50	3.47	3.47	3.48
Hydrogen Sulfide				
Concentration, ppm	0.18	0.22	0.22	0.20
Emission Rate, lb/hr	0.03	0.04	0.04	0.04
Total Reduced Sulfur				
Concentration, ppm	0.58	0.64	0.69	0.64
Emission Rate, lb/hr	0.11	0.12	0.13	0.12



TABLE 2-4
NO. 3 PAPER MACHINE VENT 2
SUMMARY OF H<sub>2</sub>S AND TOTAL TRS EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/24/21	6/24/21	6/24/21	
Time Began	1310	1416	1522	
Time Ended	1410	1516	1622	
Stack Gas Data				
Temperature, °F	178	178	179	179
Velocity, ft/sec	78	77	80	78
Moisture, %	20	19	19	19
CO <sub>2</sub> Concentration, %	0.2	0.2	0.2	0.2
O <sub>2</sub> Concentration, %	20.2	20.2	20.2	20.2
VFR, x 10 <sup>4</sup> dscfm	5.20	5.26	5.45	5.30
Hydrogen Sulfide				
Concentration, ppm	0.31	0.20	0.27	0.26
Emission Rate, lb/hr	0.08	0.06	0.08	0.07
Total Reduced Sulfur				
Concentration, ppm	0.82	0.78	0.72	0.77
Emission Rate, lb/hr	0.23	0.22	0.21	0.22

TABLE 2-5
NO. 3 PAPER MACHINE VENT 3
SUMMARY OF H<sub>2</sub>S AND TOTAL TRS EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/24/21	6/24/21	6/24/21	
Time Began	0937	1042	1145	
Time Ended	1037	1142	1245	
Stack Gas Data				
Temperature, °F	185	187	182	185
Velocity, ft/sec	83	82	82	82
Moisture, %	21	21	20	21
CO <sub>2</sub> Concentration, %	0.2	0.2	0.2	0.2
O <sub>2</sub> Concentration, %	20.2	20.2	20.2	20.2
VFR, x 10 <sup>4</sup> dscfm	5.45	5.30	5.51	5.42
Hydrogen Sulfide				
Concentration, ppm	0.30	0.29	0.32	0.30
Emission Rate, lb/hr	0.09	0.08	0.09	0.09
Total Reduced Sulfur				
Concentration, ppm	0.95	0.84	0.87	0.89
Emission Rate, lb/hr	0.27	0.24	0.25	0.26



TABLE 2-6
NO. 3 PAPER MACHINE VENT 4
SUMMARY OF H<sub>2</sub>S AND TOTAL TRS EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/25/21	6/25/21	6/25/21	
Time Began	1135	1240	1345	
Time Ended	1235	1340	1445	
Stack Gas Data				
Temperature, °F	193	194	194	194
Velocity, ft/sec	55	58	55	56
Moisture, %	27	27	26	27
CO <sub>2</sub> Concentration, %	0.2	0.2	0.2	0.2
O <sub>2</sub> Concentration, %	20.2	20.2	20.2	20.2
VFR, x 10 <sup>4</sup> dscfm	3.32	3.47	3.31	3.37
Hydrogen Sulfide				
Concentration, ppm	0.23	0.20	0.31	0.25
Emission Rate, lb/hr	0.04	0.04	0.06	0.04
Total Reduced Sulfur				
Concentration, ppm	0.69	0.66	0.73	0.69
Emission Rate, lb/hr	0.12	0.12	0.13	0.12

TABLE 2-7
NO. 3 PAPER MACHINE VENT 6
SUMMARY OF H<sub>2</sub>S AND TOTAL TRS EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/25/21	6/25/21	6/25/21	
Time Began	1555	1715	1820	
Time Ended	1655	1816	1920	
Stack Gas Data				
Temperature, °F	191	191	190	191
Velocity, ft/sec	79	80	76	78
Moisture, %	25	26	22	25
CO <sub>2</sub> Concentration, %	0.2	0.2	0.2	0.2
O <sub>2</sub> Concentration, %	20.2	20.2	20.2	20.2
VFR, x 10 <sup>4</sup> dscfm	4.18	4.18	4.21	4.19
Hydrogen Sulfide				
Concentration, ppm	0.21	0.22	0.22	0.22
Emission Rate, lb/hr	0.05	0.05	0.05	0.05
Total Reduced Sulfur				
Concentration, ppm	0.70	0.71	0.69	0.70
Emission Rate, lb/hr	0.16	0.16	0.15	0.16



TABLE 2-8
NO. 3 PAPER MACHINE VENT 7
SUMMARY OF H<sub>2</sub>S AND TOTAL TRS Emission Results

	Run 1	Run 2	Run 3	Mean
Date	6/26/21	6/26/21	6/26/21	
Time Began	0945	1050	1155	
Time Ended	1046	1150	1255	and the day
Stack Gas Data				
Temperature, °F	188	188	190	189
Velocity, ft/sec	75	74	76	75
Moisture, %	26	24	25	25
CO <sub>2</sub> Concentration, %	0.2	0.1	0.2	0.2
O <sub>2</sub> Concentration, %	20.2	20.2	20.2	20.2
VFR, x 10 <sup>4</sup> dscfm	6.40	6.42	6.52	6.45
Hydrogen Sulfide				
Concentration, ppm	0.11	0.10	0.17	0.12
Emission Rate, lb/hr	0.04	0.03	0.06	0.04
Total Reduced Sulfur				
Concentration, ppm	0.48	0.50	0.59	0.52
Emission Rate, lb/hr	0.16	0.17	0.20	0.18

TABLE 2-9
NO. 3 PAPER MACHINE VENT 8
SUMMARY OF H<sub>2</sub>S AND TOTAL TRS Emission Results

	Run 1	Run 2	Run 3	Mean
Date	6/26/21	6/26/21	6/26/21	
Time Began	1315	1420	1525	
Time Ended	1415	1520	1625	
Stack Gas Data				
Temperature, °F	184	184	184	184
Velocity, ft/sec	72	74	70	72
Moisture, %	24	23	23	23
CO <sub>2</sub> Concentration, %	0.1	0.1	0.1	0.1
O <sub>2</sub> Concentration, %	20.2	20.2	20.2	20.2
VFR, x 10 <sup>4</sup> dscfm	6.31	6.57	6.27	6.38
Hydrogen Sulfide				
Concentration, ppm	0.13	0.10	0.13	0.12
Emission Rate, lb/hr	0.04	0.03	0.04	0.04
Total Reduced Sulfur				
Concentration, ppm	0.66	0.58	0.61	0.62
Emission Rate, lb/hr	0.22	0.20	0.20	0.21



# $\begin{tabular}{ll} Table 2-10 \\ No. 2 \ and 3 \ Smelt \ Dissolving \ Tank \ Vents \\ Summary \ of \ H_2S \ and \ Total \ TRS \ Emission \ Results \\ \end{tabular}$

	Run 1	Run 2	Run 3	Mean
Date	6/27/21	6/27/21	6/27/21	
Time Began	1100	1222	1344	
Time Ended	1210	1331	1454	
Stack Gas Data				
Temperature, °F	168	170	169	169
Velocity, ft/sec	31	33	32	32
Moisture, %	39	41	41	40
CO <sub>2</sub> Concentration, %	0.0	0.0	0.0	0.0
O <sub>2</sub> Concentration, %	20.1	20.0	20.3	20.1
VFR, x 10 <sup>4</sup> dscfm	2.60	2.61	2.54	2.58
Hydrogen Sulfide				
Concentration, ppm	6.05	7.61	7.00	6.88
Emission Rate, lb/hr	0.84	1.05	0.94	0.94
Total Reduced Sulfur				
Concentration, ppm	7.42	9.24	8.24	8.30
Emission Rate, lb/hr	1.02	1.28	1.11	1.14



# TABLE 2-11 NO. 1 COMBINATION BOILER CONDITION 1: NCG AND SOG GASES SUMMARY OF H<sub>2</sub>S, TOTAL TRS, AND SO<sub>2</sub> EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/23/21	6/23/21	6/23/21	
Time Began	1158	1400	1541	
Time Ended	1258	1500	1641	
Stack Gas Data				
Temperature, °F	415	418	415	416
Velocity, ft/sec	59	57	57	57
Moisture, %	17	18	16	17
CO <sub>2</sub> Concentration, %	7.8	8.4	7.7	8.0
O <sub>2</sub> Concentration, %	12.1	11.4	12.0	11.8
VFR, x 10 <sup>5</sup> dscfm	1.35	1.31	1.33	1.33
Hydrogen Sulfide				
Concentration, ppm	0.09	0.08	0.12	0.10
Emission Rate, lb/hr	0.07	0.06	0.08	0.07
Total Reduced Sulfur				
Concentration, ppm	1.09	1.07	1.03	1.06
Emission Rate, lb/hr	0.78	0.74	0.73	0.75
Sulfur Dioxide				
Concentration, ppm	195	278	344	272
Emission Rate, lb/hr	262.7	362.5	457.4	360.9

# TABLE 2-12 NO. 1 COMBINATION BOILER CONDITION 2: NCG GASES ONLY SUMMARY OF H<sub>2</sub>S, TOTAL TRS, AND SO<sub>2</sub> EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/23/21	6/23/21	6/23/21	
Time Began	1824	2019	2202	
Time Ended	1924	2119	2302	
Stack Gas Data				
Temperature, °F	416	411	415	414
Velocity, ft/sec	56	56	56	56
Moisture, %	16	16	17	17
CO <sub>2</sub> Concentration, %	8.3	7.8	8.1	8.1
O <sub>2</sub> Concentration, %	11.4	11.9	11.6	11.6
VFR, x 10 <sup>5</sup> dscfm	1.30	1.31	1.30	1.30
Hydrogen Sulfide				
Concentration, ppm	0.08	0.08	0.08	0.08
Emission Rate, lb/hr	0.05	0.05	0.05	0.05
Total Reduced Sulfur				
Concentration, ppm	0.97	0.98	0.99	0.98
Emission Rate, lb/hr	0.67	0.68	0.68	0.68
Sulfur Dioxide				
Concentration, ppm	313	348	349	337
Emission Rate, lb/hr	404.4	452.9	450.8	436.1



# TABLE 2-13 NO. 2 COMBINATION BOILER CONDITION 1: NCG AND SOG GASES SUMMARY OF H<sub>2</sub>S, TOTAL TRS, AND SO<sub>2</sub> EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/24/21	6/24/21	6/24/21	
Time Began	1445	1630	1806	
Time Ended	1545	1730	1906	
Stack Gas Data				
Temperature, °F	475	474	479	476
Velocity, ft/sec	69	69	69	69
Moisture, %	14	14	15	14
CO <sub>2</sub> Concentration, %	6.6	6.9	7.3	6.9
O <sub>2</sub> Concentration, %	13.1	12.7	12.3	12.7
VFR, x 10 <sup>5</sup> dscfm	1.57	1.56	1.54	1.56
Hydrogen Sulfide				
Concentration, ppm	0.09	0.09	0.09	0.09
Emission Rate, lb/hr	0.07	0.07	0.07	0.07
Total Reduced Sulfur				
Concentration, ppm	1.13	0.97	0.97	1.02
Emission Rate, lb/hr	0.94	0.80	0.80	0.85
Sulfur Dioxide				
Concentration, ppm	324	327	322	324
Emission Rate, lb/hr	508.7	507.2	496.1	504.0

TABLE 2-14
No. 2 COMBINATION BOILER
CONDITION 2: NCG GASES ONLY
SUMMARY OF H<sub>2</sub>S, TOTAL TRS, AND SO<sub>2</sub> EMISSION RESULTS

	Run 1	Run 2	Run 3	Mean
Date	6/25/21	6/25/21	6/25/21	
Time Began	1000	1135	1315	
Time Ended	1100	1235	1415	
Stack Gas Data				
Temperature, °F	468	470	481	473
Velocity, ft/sec	68	69	69	69
Moisture, %	14	14	14	14
CO <sub>2</sub> Concentration, %	6.9	6.8	7.3	7.0
O <sub>2</sub> Concentration, %	12.8	12.7	12.3	12.6
VFR, x 10 <sup>5</sup> dscfm	1.56	1.55	1.56	1.56
Hydrogen Sulfide				
Concentration, ppm	0.05	0.05	0.05	0.05
Emission Rate, lb/hr	0.04	0.04	0.04	0.04
Total Reduced Sulfur				
Concentration, ppm	1.22	1.18	0.94	1.11
Emission Rate, lb/hr	1.01	0.97	0.78	0.92
Sulfur Dioxide				
Concentration, ppm	247	245	235	242
Emission Rate, lb/hr	383.2	380.0	366.2	376.4



TABLE 2-15
PAPER MACHINE 3 WHITEWATER (SAMPLE ID: 3A)
SUMMARY OF RESULTS

Date	Time	Hydrogen Sulfide (µg/L)	Methyl Mercaptan (µg/L)	Dimethyl Sulfide (µg/L)	Carbon Disulfide (µg/L)	Dimethyl Disulfide (µg/L)
6/24/21	10:00	200,000	740	ND	ND	ND
6/24/21	11:15	210,000	700	ND	ND	ND
6/24/21	11:15 (Duplicate)	190,000	840	310	ND	680
6/24/21	12:10	170,000	640	ND	ND	ND
6/24/21	13:31	160,000	540	ND	ND	ND
6/24/21	14:50	170,000	560	ND	ND	ND
6/24/21	16:00	190,000	830	360	ND	710
6/25/21	08:17	190,000	790	ND	ND	ND
6/25/21	09:24	130,000	560	170	ND	ND
6/25/21	10:30	150,000	710	170	ND	ND
6/25/21	12:00	130,000	620	340	ND	550
6/25/21	12:55	140,000	730	180	ND	ND
6/25/21	14:03	180,000	1,200	400	ND	840
6/25/21	16:30	160,000	1,300	ND	ND	430
6/25/21	17:40	170,000	1,300	ND	ND	250
6/25/21	18:45	140,000	1,300	ND	ND	ND
6/26/21	10:10	90,000	1,100	420	ND	710
6/26/21	11:25	75,000	1,700	180	ND	170
6/26/21	12:30	59,000	2,000	170	ND	ND
6/26/21	14:00	42,000	1,500	150	ND	170
6/26/21	14:45	37,000	1,500	ND	ND	120
6/26/21	15:50	41,000	1,700	190	22	81

Note: ND (Not Detected). The compound was analyzed but not detected above the laboratory report limit.



TABLE 2-16
PULP DRYER WATER (SAMPLE ID: 3B)
SUMMARY OF RESULTS

Date	Time	Hydrogen Sulfide (µg/L)	Methyl Mercaptan (μg/L)	Dimethyl Sulfide (µg/L)	Carbon Disulfide (µg/L)	Dimethyl Disulfide (µg/L)
6/26/21	13:05	9.4	7.7	37	ND	11
6/26/21	14:15	7.7	5.8	42	ND	15
6/26/21	15:30	5.4	5.9	47	ND	17

Note: ND (Not Detected). The compound was analyzed but not detected above the laboratory report limit.

TABLE 2-17
STEAM STRIPPER INLET FOUL CONDENSATE (SAMPLE ID: 2A)
SUMMARY OF RESULTS

Date	Time	Hydrogen Sulfide (µg/L)	Methyl Mercaptan (µg/L)	Dimethyl Sulfide (µg/L)	Carbon Disulfide (µg/L)	Dimethyl Disulfide (µg/L)
6/24/21	15:10	130,000	14,000	16,000	ND	13,000
6/24/21	15:10 Duplicate	140,000	14,000	16,000	ND	17,000
6/24/21	17:00	140,000	17,000	18,000	ND	14,000
6/24/21	18:45	150,000	19,000	18,000	ND	16,000
6/25/21	10:35	130,000	12,000	12,000	ND	11,000
6/25/21	12:05	120,000	10,000	12,000	ND	9,600
6/25/21	13:45	190,000	22,000	22,000	ND	23,000

Note: ND (Not Detected). The compound was analyzed but not detected above the laboratory report limit.



## TABLE 2-18 STEAM STRIPPER OUT (SAMPLE ID: 2B) SUMMARY OF RESULTS

Date	Time	Hydrogen Sulfide (µg/L)	Methyl Mercaptan (µg/L)	Dimethyl Sulfide (µg/L)	Carbon Disulfide (µg/L)	Dimethyl Disulfide (µg/L)
6/24/21	15:15	5,000	200	2,800	ND	4,100
6/24/21	15:15 Duplicate	3,200	94	3,000	ND	4,400
6/24/21	17:05	7,100	540	2,900	ND	3,900
6/24/21	18:50	8,100	760	3,000	ND	4,100
6/25/21	10:40	3,300	100	2,400	ND	3,600
6/25/21	12:10	550	4.8	1,900	2.0	3,000
6/25/21	13:50	3,500	260	2,500	ND	4,300

Note: ND (Not Detected). The compound was analyzed but not detected above the laboratory report limit.



### Section 3 Source Testing Methodology

The emission testing program was conducted in accordance with the U.S. EPA Reference Methods summarized in Table 3-1. Method descriptions and quality assurance data are provided in the referenced appendices.

TABLE 3-1
SOURCE TESTING METHODOLOGY

		Appendix Reference		
Parameter	Method Number	Method Description	Quality Control Data	Comments
Volumetric Flow Rate	1,2,4	B.1	Н	
Gas Composition	3A	B.2	Н	Instrumental
Gas Composition (Bags)	3A	B.3	Н	See Note
Total Reduced Sulfur	16	B.4	Н	
Sulfur Dioxide	6C	B.5	Н	Instrumental

Note: Oxygen (O<sub>2</sub>) and carbon dioxide (CO<sub>2</sub>) concentrations for the Pulp Dryer, No. 3 Paper Machine Vents, and the No. 2 and 3 SDTVs were determined from integrated bag samples collected concurrently with the TRS sampling. These samples were analyzed instrumentally using an analyzer calibrated according to the procedures of Method 3A.

These results meet all requirements of TNI unless otherwise specified.

The results within this report relate only to the samples listed in the body of this report.



# SECTION 4 QUALITY ASSURANCE/ QUALITY CONTROL

#### 4.1 QUALITY CONTROL PROCEDURES

As part of all testing, WESTON implements a QA/QC program. The field team leader is responsible for implementation of field QA/QC procedures. Individual laboratory managers are responsible for implementation of analytical QA/QC procedures. The overall project manager and the Quality Assurance Manager oversee all QA/QC procedures to ensure that sampling and analyses meet the QA/QC requirements and that accurate data results are generated from the test program.

#### 4.2 GAS STREAM SAMPLING QA/QC PROCEDURES

General checks that are conducted during testing and apply to all methods include the following:

- Performance of leak checks.
- Use of standardized forms, labels, and checklists.
- Maintenance of sample traceability.
- Collection of appropriate blanks.
- Use of calibrated instrumentation.
- Review of data sheets in the field to verify completeness.
- Use of validated spreadsheets for calculation of results.

The following section details the specific procedures applied to the reference method sampling system.

#### **Instrumental Reference Method Sampling Systems**

- The sampling system (probe to sample conditioner) is leak-checked prior to the testing.
- All analyzers are calibrated prior to testing to ensure precise and accurate data. Protocol standards are used to calibrate each of the analyzers. Each analyzer is calibrated at three to four points (zero, low, mid, and high range) depending on reference method requirements. Nitrogen or hydrocarbon-free air is used to set the instrument zero. The CO<sub>2</sub> and O<sub>2</sub> calibration standards are 40 to 60 and 100% of span.
- Pre- and post-test calibration bias and calibration drift tests are performed for each test run. The bias check is performed with the calibration standard that is closest to the observed concentration in the sample gas. The average pretest/posttest bias did not exceed 5% of full scale. The calibration drift did not exceed 3%.



- Prior to formal testing, a 12-point stratification check is performed at the test location. Alternatively, per Section 8.1.2 of EPA Method 7E, a three-point stratification check passing through the centroidal area of the stack is performed. The three points (16.7, 50, and 83.3% of the stack diameter) are sampled a minimum of two times the system response.
- A response time check is performed before sampling. Sample flow rate must be maintained within 10% of the flow rate at which the system response time was measured.
- A permanent data record of analyzer responses is recorded using computer software designed by WESTON.

#### 4.3 QA/QC CHECKS FOR DATA REDUCTION AND VALIDATION

All data and/or calculations for flow rates and moisture contents, which are made using a computer software program, are validated by an independent check. In addition, all calculations are spot checked for accuracy and completeness by the Field Team Manager.

In general, all measurement data are validated based on the following criteria:

- Process conditions during sampling or testing.
- Acceptable sample collection procedures.
- Consistency with expected or other results.
- Adherence to prescribed QC procedures.

Any suspect data are flagged and identified with respect to the nature of the problem and potential effect on the data quality.

Upon completion of testing, the Field Team Manager is responsible for preparation of a complete data summary including calculation results, raw data sheets, and laboratory reports.



## APPENDIX A SAMPLE CALCULATIONS



#### SAMPLE CALCULATIONS

#### No. 3 Paper Machine Vent 1 Run No. 1

#### Meter Pressure (Pm), in. Hg

$$Pm = Pb + \frac{\Delta H}{13.6 \text{ in. } H_2O/\text{in. } Hg}$$

where, Pb = barometric pressure, in. Hg  $\Delta H$  = Pressure differential of orifice in. H<sub>2</sub>O

$$Pm = 29.68 \text{ in. } Hg + \frac{1.300 \text{ in. } H_2O}{13.6 \text{ in. } H_2O/\text{in. } Hg} = 29.78 \text{ in. } Hg$$

#### Absolute Stack Gas Pressure (Ps), in. Hg

$$Ps = Pb + \frac{Pg}{13.6 \text{ in. } H_2O/\text{in. } Hg}$$

where, Pb = barometric pressure, in. Hg Pg = Static Pressure, in.  $H_2O$ 

$$Ps = 29.68 \text{ in. } Hg + \frac{-0.65 \text{ in.} H_2O}{13.6 \text{ in. } H_2O/\text{in. } Hg} = 29.63 \text{ in. } Hg$$

#### Standard Meter Volume (Vmstd), dscf

$$Vmstd = \frac{17.64 \,^{\circ}R/in. \, Hg \, x \, Y \, x \, Vm \, x \, Pm}{Tm}$$

where, Y = meter correction factorVm = meter volume, dscf

Pm = meter pressure, in. Hg Tm = meter temperature, °R

$$Vmstd = \frac{17.64 \text{ °R/in. Hg x } 1.003 \text{ x } 29.740 \text{ dscf x } 29.78 \text{ in. Hg}}{522.2 \text{ °R}} = 30.003 \text{ dscf}$$

#### Standard Wet Volume (Vwstd), scf

 $Vwstd=0.04707ft^3/mL \times Vlc$ 

where,  $Vlc = volume of H_2O collected, mL$ 



$$Vwstd = 0.04707 \, ft^3 / mL \, x \, 147.7 \, mL = 6.952 \, scf$$

#### Moisture Fraction (Measured), (Bws)

$$Bws = \frac{Vwstd}{(Vwstd + Vmstd)} = \frac{6.952 \, scf}{6.952 \, scf + 30.003 \, dscf} = 0.188$$

where, Vwstd = standard wet volume, scf Vmstd = standard meter volume, dscf

#### Moisture %, (Bws %)

$$Bws = Bws \ x \ 100 = 0.188 \ x \ 100 = 18.8$$

Bws = moisture fraction, measured or at saturation, whichever is lowest

#### Molecular Weight (DRY) (Md), lb/lb-mole

$$Md = (0.44 \times \% CO_2) + (0.32 \times \% O_2) + (0.28 (100 - \% CO_2 - \% O_2))$$

$$Md = (0.44 \times 0.2) + (0.32 \times 20.2) + (0.28 (100 - 0.2 - 20.2)) = 28.84 lb/lb-mole$$

#### Molecular Weight (WET) (Ms), lb/lb-mole

$$Ms = Md (1 - Bws) + 18 (Bws)$$

Ms = Md (1 - Bws) + 18 (Bws) where, Md = molecular weight (DRY), lb/lb-mole Bws = moisture fraction, dimensionless

$$Ms = 28.84 lb/lb$$
-mole  $(1 - 0.188) + 18 (0.188) = 26.80 lb/lb$ -mole

#### Average Velocity (Vs), ft/sec

$$V_S = 85.49 \frac{ft}{sec} \sqrt{\frac{(lb/lb - mole) (in. Hg)}{(°R)(in. H_2O)}} \times Cp \times \sqrt{Delta P} \text{ avg. } x \sqrt{\frac{Ts}{Ps \times Ms}}$$

where, Cp = pitot tube coefficient

Delta  $P = \text{velocity head of stack gas, in. } H_2O$ 

Ts = absolute stack temperature, °R

Ps = absolute stack gas pressure, in. Hg

Ms = molecular weight of stack gas, lb/lb-mole

$$Vs = 85.49 \; \frac{ft}{sec} \; \sqrt{\frac{(lb/lb-mole)\; (in.\; Hg)}{(^{\circ}R)(in.H_2O)}} \; \; x \; \; 0.84 \; \; x \; \; 0.993 \; in. \; H_2O \; \; x \; \; \sqrt{\frac{631.2 \; ^{\circ}R}{29.63 \; in. \; Hg \; x \; 26.80 \; lb/lb-mole}}$$

$$Vs = 63.60 \text{ ft/sec}$$



#### Average Stack Gas Flow at Stack Conditions (Qa), acfm

$$Qa = 60 \text{ sec/min } x \text{ Vs } x \text{ As}$$

where, Vs = stack gas velocity, ft/sec

As = cross-sectional area of stack,  $ft^2$ 

$$Qa = 60 \text{ sec/min } x 63.60 \text{ ft/sec } x 13.64 \text{ ft}^2 = 5.20 \text{ E} + 4 \text{ acfm}$$

#### Average Stack Gas Flow at Standard Conditions (Qs), dscfm

$$Qs = 17.64 \frac{^{\circ}R}{in. Hg} \times Qa \times (1 - Bws) \times \frac{Ps}{Ts}$$

where, Qa = average stack gas flow at stack conditions, ft<sup>3</sup>/min

Bws = moisture content (dimensionless)

Ps = absolute stack gas pressure, in. Hg

Ts = absolute stack temperature, °R

$$Qs = 17.64 \frac{^{\circ}R}{in. Hg} \times 5.20 E + 4 \frac{acf}{min} \times (1 - 0.188) \times \frac{29.63 in. Hg}{631.2 ^{\circ}R} = 3.50 E + 4 dscfm$$

#### Total Reduced Sulfur Emission Rate (EMR), lb/hr

$$EMR = \frac{TRS \ conc. \ x \ MW \ x \ Qs \frac{dscf}{min} \ x \ 60 \frac{min}{hr} \ x \ 28.32 \frac{L}{dscf}}{24.04 \frac{L}{g - mole} \ x \ 1.0 \ x \ 10^6 \frac{\mu L}{L} \ x \ 454 \frac{g}{lb}}$$

where, MW = molecular weight of TRS, 34.08 g/g-mole Qs = stack gas flow at standard conditions, dscfm

$$EMR = \frac{0.57 \, ppm \, x \, 34.08 \, \frac{g}{g\text{-mole}} \, x \, 3.50 \, E + 4 \, \frac{dscf}{min} \, x \, 60 \, \frac{min}{hr} \, x \, 28.32 \, \frac{L}{dscf}}{24.04 \, \frac{L}{g\text{-mole}} \, x \, 1.0 \, x \, 10^6 \, \frac{\mu L}{L} \, x \, 454 \, \frac{g}{lb}} = 0.11 \, lb/hr$$

Note: Sulfur dioxide was calculated using the same equation as presented for TRS, substituting molecular weight.



## APPENDIX B TEST METHODOLOGY

- **B.1** VOLUMETRIC FLOW RATE
- **B.2** GAS COMPOSITION
- **B.3** GAS COMPOSITIONS (BAGS)
- **B.4** TOTAL REDUCED SULFUR
- **B.5** SULFUR DIOXIDE



#### **B.1 VOLUMETRIC FLOW RATE**

Mass emission rates are calculated by multiplying measured target analyte concentrations by calculated volumetric flow rates. Volumetric flow rates are determined using measurement data obtained by EPA Reference Methods 1-4.

The ductwork is measured at the sample location to the nearest 0.25 inch using a steel tape measure. Traverse points are selected in accordance with EPA Reference Method 1 on the basis of ductwork dimensions, geometry, and upstream and downstream disturbances. When a sample location does not meet EPA Reference Method 1 criteria, the maximum recommended number of traverse points are used.

#### **Gas Velocity**

The velocity of the gas stream is measured in accordance with EPA Reference Method 2 by reading the instantaneous velocity pressure at each traverse point using an "S" type pitot tube and a leveled, inclined manometer with a scale of 0 to 10 inches. In rare cases of highly negative pressure sources, a Magnahelic gauge with scales of 0 to 5 or 0 to 25 inches of water may be used in place of an inclined manometer. The stack pressure is calculated from the measured static pressure of the stack and the ambient barometric pressure corrected for elevation when applicable. The static pressure is measured by using the static side of the pitot tube, and the barometric pressure is measured using a calibrated aneroid barometer. The stack temperature is measured at each traverse point with a calibrated thermocouple and pyrometer.

#### **Gas Composition and Moisture Content**

The composition of the gas stream will be measured in accordance with EPA Reference Method 3 and/or 3A using an Orsat analyzer or Paramagnetic O<sub>2</sub> and Infrared CO<sub>2</sub> analyzers using Protcol-1 gases. Gas composition determinations are conducted using integrated sampling techniques.

Integrated samples are collected by withdrawing a sample from the M5 sampling train into a Tedlar sample bag.

The moisture content of the gas stream is determined according to EPA Reference Method 4, by collecting an integrated sample of source gas from a single point on the gas stream. At the conclusion of each run the volume of condensed moisture collected in the impingers of the sampling train is measured and used to evaluate the moisture content of the gas stream.

When sources are saturated or contain entrained water droplets, moisture content is also determined using the temperature measured at each traverse point and psychometric chart values corrected for stack pressure or by use of saturation vapor pressure tables. In these conditions, the lower moisture of the measured and saturation based values is used for volumetric flow rate calculations.



The molecular weight of the gas stream is calculated using the determined moisture, oxygen, and carbon dioxide concentrations. The balance of the gas stream is assumed to be nitrogen. The volumetric flow is then calculated at stack and standard conditions using the calculated molecular weight, the measured stack temperature, and measured velocity, stack and barometric pressures. Standard conditions are 68 °F and 29.92 inches of mercury and 0% moisture.

#### **Data Acquisition and Reporting**

Data are recorded at the time of collection on preprinted data sheets. Calculations are performed (where possible) with preprogrammed calculators or spreadsheet software.

#### **Quality Control**

Quality control procedures for volumetric flow measurements involve leak checks of pitot tubes, pitot tube lines and manometers; calibration of gas metering systems; and periodic calibration checks of thermocouples and pyrometers. Magnahelics are verified against inclined manometers prior to each use.

Data transfers are minimized. Data sheets are checked for completeness and accuracy. Calculations are verified by a second person.

#### **B.2** GAS COMPOSITION (INSTRUMENTAL)

Oxygen (O<sub>2</sub>) and carbon dioxide (CO<sub>2</sub>) testing is conducted in accordance with EPA Reference Method 3A.

#### **Sampling Equipment and Procedures**

Figure B-1 illustrates the sampling system. The sample is withdrawn continuously from the source through a heated probe, filter, and sample line to a sample conditioner which removes moisture from the gas stream. The sample is then transported to a Paramagnetic O<sub>2</sub> analyzer and an Infrared CO<sub>2</sub> analyzer.

#### Sample Analysis

The O<sub>2</sub> analyzer uses an electrochemical cell or a paramagnetic detector, and the CO<sub>2</sub> analyzer uses a non-dispersive infra-red (NDIR) detector to produce an electrical signal which is linearly proportional to the O<sub>2</sub> and CO<sub>2</sub> concentration, respectively.



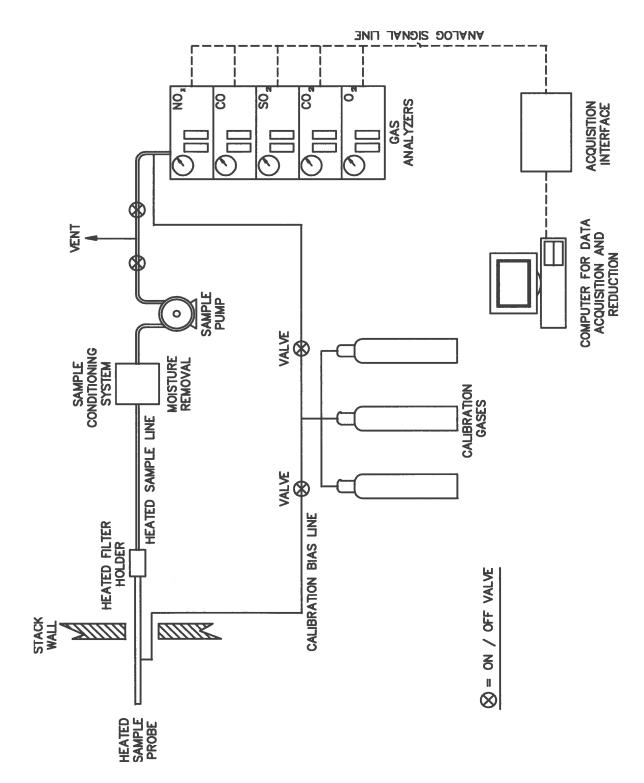


Figure B-1 Continuous Emission Monitoring System



#### **Data Acquisition and Reduction**

Data are acquired electronically using a computer with software designed by WESTON for EPA Reference Method 3A analysis. This system generates a calibration curve, converts electronic signals into concentrations, and provides one-minute averages during the sample run and an average concentration over the duration of the sample run.

#### **Quality Control**

At the time of analysis, O<sub>2</sub> and CO<sub>2</sub> in nitrogen calibration gases certified according to EPA Protocol-1, are used to calibrate the analyzer and to determine a bias correction factor for the entire system bias in accordance with EPA Reference Method 3A. The calibration gases are introduced directly to the analyzer to generate the calibration curve. A zero gas and an upscale calibration gas are introduced at the probe and recovered through the sampling and analytical system. A bias correction factor is calculated using the ratio of the concentration measured from the sampling system and concentration measured directly at the analyzer. Sample run averages are corrected for system bias results.

#### **B.3** GAS COMPOSITION (BAGS WITH INSTRUMENTAL ANALYSIS)

Oxygen (O<sub>2</sub>) and carbon dioxide (CO<sub>2</sub>) measurement is conducted by collecting integrated samples in Tedlar<sup>®</sup> gas-sampling bags collected according to the procedures specified in EPA Reference Method 3. The samples are analyzed on equipment operated and calibrated according to EPA Reference Method 3A.

#### **Sampling Equipment and Procedures**

Samples of the source gas are collected in Tedlar® gas-sampling bags. The gas is sampled at a constant flow rate over the duration of a test run at each traverse point. The flow rate is set to a value which results in a sample volume that is adequate for analysis without overfilling the bag. The sample passes through a moisture condenser before entering the bag.

#### Sample Analysis

Analysis of the sample is performed by attaching the bag directly to the inlets of electronic O<sub>2</sub> and CO<sub>2</sub> analyzers. These analyzers are calibrated before analysis using the procedures described in Method 3A. At least three data points are recorded for each sample, and the sample concentration is taken as the average of these values.

The oxygen analyzer uses a paramagnetic detector. This device exploits magnetic properties unique to  $O_2$  to produce an electrical signal that is linearly proportional to the concentration of the gas.



The carbon dioxide analyzer uses non-dispersive infrared (NDIR) technology. The sample gas is passed through a chamber through which is passed infrared light of a wavelength that is specific to CO<sub>2</sub>. The CO<sub>2</sub> in the gas absorbs light of this wavelength to a degree that is proportional to the CO<sub>2</sub> concentration. The electronics in the analyzer measure the absorption of the light and produce a signal that is linearly proportional to the gas concentration.

#### **Data Acquisition and Reduction**

The electrical outputs of the analyzers are connected to an analog-to-digital (A/D) conversion device installed in a Windows®-based computer running software designed by WESTON for analysis by Method 3A and similar EPA Methods.

The software reads the values presented by the A/D device at one-second intervals and periodically records averages of these readings. The software also handles calibrations and the generation of calibration curves and performs all calculations, including the determination of gas concentrations from the recorded inputs.

#### **Quality Control**

The bags and the equipment used to fill the bags are checked for leaks before sampling begins. Bags are analyzed as soon as possible after sample collection and are not held for more than 8 hours before analysis.

The analyzers are calibrated prior to analysis using gas mixtures certified by their manufacturer according to EPA Protocol 1. For calibration, the gases are introduced directly to the analyzers.

#### **B.4 TOTAL REDUCED SULFUR**

Total reduced sulfur testing is performed using the procedures described in EPA Reference Method 16. When TRS data must be oxygen corrected, EPA Reference Method 3A using a calibrated O<sub>2</sub> analyzer, is performed on an integrated bag sample to measure oxygen concentration.

#### **Sampling Equipment and Procedures**

Figure B-2 illustrates the sampling system. A Teflon®-lined, stainless steel probe of sufficient length to monitor the gas stream (without wall effects) is used to extract a gas sample from the emission source. The probe tip is directed away from stack gas flow to minimize particulate and moisture entrainment. The probe is connected directly to the recovery gas line and sample conditioning system.



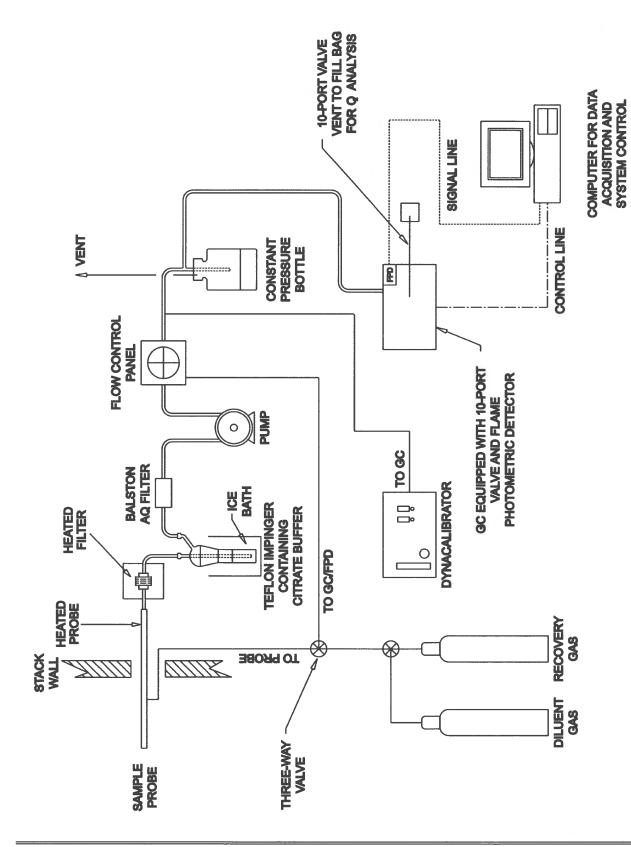


Figure B-2 EPA Reference Method 16 Sampling and Analytical Train



The sample conditioning system consists of a Teflon® impinger containing 1.5M citrate buffer, adjusted to a pH of 5.4 to 5.6, maintained in an ice bath. Moisture is condensed in the impingers, yielding a dry sample and thus eliminating the need for heated sample lines. Even though the impinger set traps entrained particulate matter, very fine particulate matter is removed by a Balston® AQ Microfiber filter installed at the impinger outlet.

An unheated nylon line is connected from the filter to the sample pump inlet. Sample line length and connections are minimized to reduce surface adsorption of TRS and the possibility of leaks.

The pump outlet is connected directly to a constant pressure bottle. At this point, a major portion of the sample is vented to the atmosphere, and the remainder is used to charge the gas chromatograph (GC) sample loop. The GC sample loop outlet is connected to a Tedlar® gas collection bag gas sample collection and subsequent analysis using a calibrated O<sub>2</sub> analyzer.

#### Sample Analysis

Separation of hydrogen sulfide (H<sub>2</sub>S), methyl mercaptan (MeSH), dimethyl sulfide (DMS), and dimethyl disulfide (DMDS) is accomplished by gas chromatography using a column suitable for separating these compounds. After resolution of H<sub>2</sub>S, MeSH, and DMS, the column is backflushed to achieve resolution of DMDS within 2-3 minutes from sample injection. The gas chromatograph is operated on periodic cycle to produce a minimum of 20 injections per hour.

Detection of reduced sulfur compounds is accomplished with a flame photometric detector (FPD). The FPD response is calibrated before and after testing using gas phase standards prepared from gravimetrically certified permeation devices.

#### **Data Acquisition and Reduction**

The FPD responses are recorded by a computer equipped with software designed by WESTON for reduced sulfur compound analysis. The software controls the timing of the gas-chromatographic cycle, integrates and records peaks, performs calculations, and prints the results. Calibration curves are generated by the software using log-log linear least squares best fit of the data.

#### **Quality Control**

Permeation devices certified by the vendor are used to calibrate the FPD response. They are kept in a permeation chamber that is maintained at a constant temperature of  $50^{\circ} \pm 1^{\circ}$ C, the temperature at which the vendor certified the permeation rates. This assures that the actual permeation rates are the same as the certified rates. This temperature is verified at the time of sampling using a National Institute of Standards and Technology (NIST) traceable mercury-in-glass thermometer.



VICI-Metronics, Santa Clara, California, supplied the permeation devices for the testing. The devices are gravimetrically analyzed to measure the emission rate before shipment.

Various concentrations of the permeants are generated by varying the flow of the diluent gas stream over the devices. A calibration curve is constructed of at least three concentrations of each permeant; three successive injections at each concentration yield peak areas that differ from the mean peak area value by less than 5%.

Sampling system integrity is evaluated after every three hours of sampling by injecting a known concentration of H<sub>2</sub>S at the probe tip and recovering the sample through the sample conditioning and sample transport subsystems. The same gas stream is then introduced directly to the GC sample loop. The ratio of concentrations corresponds to the system correction factor. This factor is then used to adjust measured reduced sulfur compound concentrations.

A system audit gas (of appropriate H<sub>2</sub>S concentration) is used to evaluate the analytical system integrity each test day.

#### **B.5 SULFUR DIOXIDE (INSTRUMENTAL)**

Sulfur dioxide (SO<sub>2</sub>) testing is conducted in accordance with EPA Reference Method 6C.

#### **Sampling Equipment and Procedures**

Figure B-1 illustrates the sampling system. The sample is withdrawn from the source through a heated probe, heated filter, and heated sample line to a sample conditioner which removes moisture from the gas stream. The sample is then transported to the analyzer through a Teflon® line.

#### Sample Analysis

The analyzer measures, at two discrete wavelengths, the absorption of ultraviolet radiation by the gas sample. The concentration of the components absorbing the light are then determined from relationships developed through application of the ideal gas law in concert with the laws of Bouguer, Beer, and Lambert.

#### **Data Acquisition and Reduction**

Data are acquired electronically using a computer with software designed by WESTON for EPA Reference Method 6C analysis. This system generates a calibration curve, converts electronic signals into concentrations, and provides bias-corrected averages.



#### **Quality Control**

At the time of analysis, SO<sub>2</sub> in nitrogen calibration gases (certified according to EPA Protocol-1) are used to calibrate the analyzer and to determine a bias correction factor for the entire system in accordance with EPA Reference Method 6C.

Calibration gases are introduced directly to the analyzer to generate the calibration curve. Zero level and upscale calibration gases are introduced at the probe and recovered through the sampling and analytical system. A bias correction factor is then calculated using the ratio of the measured concentration of the bias gas introduced through the sampling system and the measured concentration of the bias gas introduced directly to the analyzer. Run averages are adjusted for this bias correction factor.



# APPENDIX C FIELD DATA – PULP DRYER

12 July 2021 3:00 p.m. Version

New Indy Catawba, SC 15730.001.008 Pulp Dryer

#### **EMISSION CALCULATIONS**

Date Time Began Time Ended			Run 1 6/26/21 / 1230 1339	Run 2 6/26/21 1347 1454	Run 3 6/26/21 1506 1611	Mean  
Volumetric Flow Ra BWS % Oxygen Recovery, %	te, (Qs), DSCFM		3.93E+04 0.078 20.8 96.6	3.90E+04 0.106 20.9 96.6	3.97E+04 0.092 20.9 96.6	3.93E+04 0.092 20.9 96.6
	fur (TRS MW) ntration, ppm on Rate, lb/hr	)= 34.08	1.18 J 0.25	1.09 0.23	1.06 0.22	1.11 0.23
Concer	(H2S MW) intration, ppm intration, ppm (Corrected for on Rate, lb/hr		0.09 0.09 0.02	0.08 0.08 0.02	0.07 0.07 0.02	0.08 0.08 0.02



New Indy Catawba, SC 15730.001.008 Pulp Dryer

ISOKINETIC	CAL	CIII	ZIONS	
13UNING HIL	CAL	CUL	AIIUNS	

Run Number Date Time Began Time Ended  INPUT D  Sampling Time, min (Theta) Stack Diameter, in. (Dia.) Barometric Pressure, in. Hg (Pb) Static Pressure, in. H2O (Pg) Pitot Tube Coefficient (Cp) Meter Correction Factor (Y) Orifice Calibration Value (Delta H@)	64.0 60 29.70 -0.27 0.84 0.9880 1.7320 0.250 42.959 86.8	6/26/21 1347 - 1455 - 64 60 29.70 -0.27 0.84 0.9880 1.7320 0.250 43.492	6/26/21 1506 1614 64 60 29.70 -0.27 0.84 0.9880 1.7320 0.250	60 29.70 -0.27 0.84 0.9880 1.7320
Time Began Time Ended  INPUT D  Sampling Time, min (Theta)  Stack Diameter, in. (Dia.)  Barometric Pressure, in. Hg (Pb)  Static Pressure, in. H2O (Pg)  Pitot Tube Coefficient (Cp)  Meter Correction Factor (Y)	1341 64.0 60 29.70 0.27 0.84 0.9880 1.7320 0.250 42.959 86.8	1455 64 60 29.70 -0.27 0.84 0.9880 1.7320 0.250 43.492	64 60 29.70 -0.27 0.84 0.9880 1.7320 0.250	29.70 -0.27 0.84 0.9880
Time Ended  INPUT D  Sampling Time, min (Theta)  Stack Diameter, in. (Dia.)  Barometric Pressure, in. Hg (Pb)  Static Pressure, in. H2O (Pg)  Pitot Tube Coefficient (Cp)  Meter Correction Factor (Y)	0ATA  64.0  60  29.70  -0.27  0.84  0.9880  1.7320  0.250  42.959  86.8	64 60 29.70 -0.27 0.84 0.9880 1.7320 0.250 43.492	64 60 29.70 -0.27 0.84 0.9880 1.7320 0.250	60 29.70 -0.27 0.84 0.9880 1.7320
Sampling Time, min (Theta) Stack Diameter, in. (Dia.) Barometric Pressure, in. Hg (Pb) Static Pressure, in. H2O (Pg) Pitot Tube Coefficient (Cp) Meter Correction Factor (Y)	64.0 60 29.70 -0.27 0.84 0.9880 1.7320 0.250 42.959 86.8	60 29.70 -0.27 0.84 0.9880 1.7320 0.250 43.492	60 29.70 -0.27 0.84 0.9880 1.7320 0.250	60 29.70 -0.27 0.84 0.9880 1.7320
Stack Diameter, in. (Dia.)  Barometric Pressure, in. Hg (Pb)  Static Pressure, in. H2O (Pg)  Pitot Tube Coefficient (Cp)  Meter Correction Factor (Y)	29.70 - -0.27 - 0.84 - 0.9880 - 1.7320 - 0.250 - 42.959 - 86.8	60 29.70 -0.27 0.84 0.9880 1.7320 0.250 43.492	60 29.70 -0.27 0.84 0.9880 1.7320 0.250	60 29.70 -0.27 0.84 0.9880 1.7320
Barometric Pressure, in. Hg (Pb) Static Pressure, in. H2O (Pg) Pitot Tube Coefficient (Cp) Meter Correction Factor (Y)	29.70 - -0.27 - 0.84 - 0.9880 - 1.7320 - 0.250 - 42.959 - 86.8	29.70 -0.27 0.84 0.9880 1.7320 0.250 43.492	29.70 -0.27 0.84 0.9880 1.7320 0.250	29.70 -0.27 0.84 0.9880 1.7320
Static Pressure, in. H2O (Pg) Pitot Tube Coefficient (Cp) Meter Correction Factor (Y)	-0.27 0.84 0.9880 1.7320 0.250 42.959 86.8	-0.27 0.84 0.9880 1.7320 0.250 43.492	-0.27 0.84 0.9880 1.7320 0.250	-0.27 0.84 0.9880 1.7320
Pitot Tube Coefficient (Cp) Meter Correction Factor (Y)	0.84 / 0.9880 / 1.7320 / 0.250 / 42.959 / 86.8	0.84 0.9880 1.7320 0.250 43.492	0.84 0.9880 1.7320 0.250	0.84 0.9880 1.7320
Meter Correction Factor (Y)	0.9880 1.7320 0.250 42.959 86.8	0.9880 1.7320 0.250 43.492	0.9880 1.7320 0.250	0.9880 1.7320
	1.7320 0.250 42.959 86.8	1.7320 0.250 43.492	1.7320 0.250	1.7320
Orifice Calibration Value (Delta H@)	0.250 / 42.959 / 86.8	0.250 43.492	0.250	
( ),	42.959 86.8	43.492		0.350
Nozzle Diameter, in. (Dn)	86.8			0.230
Meter Volume, ft <sup>3</sup> (Vm)			43.845	43.432
Meter Temperature, °F (Tm)		92.3	93.6	90.9
Meter Temperature, °R (Tm-R)	546.8	552.3	553.6	550.9
Meter Orifice Pressure, in. H2O (Delta H)	1.300 -	1.300	1.300	1.300
Ave Sq Rt Orifice Press, (in. H2O) <sup>\(\sigma\)</sup> / <sub>2</sub> ((Delta H)½)avg)	1.140	1.140	1.140	1.140
Volume H2O Collected, mL (Vlc)	73.0	102.8	88.4	88.1
CO2 Concentration, % (CO2)	0.0	0.0	0.0	0.0
O2 Concentration, % (O2)	20.8	20.9	20.9	20.9
Ave Sq Rt Velo Head, (in. H2O) <sup>\(\frac{1}{2}\)</sup> ((Delta P) <sup>\(\frac{1}{2}\)</sup> )avg)	0.689	0.702	0.705	0.699
Stack Temperature, °F (Ts)	157.8	158.8	157.8	158.1
Stack Temperature, °R (Ts-R)	617.8	618.8	617.8	618.1
Moisture Fraction (at Saturation) (BWS)	0.309	0.316	0.309	0.311
CALCULATE	ED DATA			
Nozzle Area, ft <sup>2</sup> (An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft <sup>2</sup> (As)	19.63	19.63	19.63	19.63
Stack Pressure, in. Hg (Ps)	29.68	29.68	29.68	29.68
Meter Pressure, in. Hg (Pm)	29.80	29.80	29.80	29.80
Standard Meter Volume, ft <sup>3</sup> (Vmstd)	40.797	40.896	41.130	40.941
Standard Water Volume, ft <sup>3</sup> (Vwstd)	3.436	4.839	4.161	4.145
Moisture Fraction (Measured) (BWS)	0.078	0.106	0.092	0.092
Moisture Fraction (Investative)  Moisture Fraction (Investative)  (BWS)	0.078	0.106	0.092	0.092
Mol. Wt. of Dry Gas, lb/lb-mole (Md)	28.83	28.84	28.84	28.83
Mol. Wt. of Stack Gas, lb/lb-mole (Ms)	27.99	27.69	27.84	27.84
Average Stack Gas Velocity, ft/sec (Vs)	42.65	43.74	43.78	43.39
Stack Gas Flow, actual, ft <sup>3</sup> /min (Qa)	50245	51527	51580	51118
		38983	39695	39317
Stack Gas Flow, Std , ft³/min (Qs)	39272	30703	37073	37317
Calibration check (Yqa)	0.9904	0.9831	0.9763	0.983
Percent difference from Y	0.7701	0.2001	· · · · · · ·	-0.48%



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Page 1 of 1		Ž	Leak Chec	Initis	00.	) ox	100:	-	V
Page		K Factor	Leal		Volume ft <sup>3</sup>	@ Vac., in. Hq	Pitot	DI	Sample ID 0 A
	ц	n. Hg	n. H,0	nhi	1 15		2	Filter ID	
	Ambient Temp. \$5 °F	Baro. Pressure* 24,70 in. Hg	Static Pressure - 27 in. H <sub>2</sub> 0	Gain 64,7 r	Silica Gel Gain & 5 q 15		Stack Area 14, 63 ft2		erse Points 16
4, Moisture	Ambient 1	Baro. Pres	Static Pre	Impinger	Silica Gel		Stack	250, 1256	. Total Trave
Method: EPA 4, Moisture	4616	1698	1,732	PR.58 5'	55	Pitot ID/Coeff. p172 0.84	20104	Nozzle ID/Diams. ,250 ,250 ,250 ,256	Avg. Nozzle Diam. 150 in. Total Traverse Points 16
	Console ID	Meter Corr., Y	Console ∆H@	Probe ID/Length pa52	Liner Material	Pitot ID/Coeff.	Thermo ID	Nozzle ID/Diams.	Avg. Nozzle Diam.
ld Data	New Indy	Catawba, SC	Pulp Dryer	you'd outles	15730.001.008		6126121	A10/4	64 min.
<b>Isokinetic Field Data</b>	Client	Location/Plant	Source	Sample Location	W. O. Number	Run Number	Date	Test Personnel	Sample Time

1	K Factor	Leak		Volume, ft <sup>3</sup>	@ Vac., in. Hg	Pitot	ilter ID NA	Sample ID Run A	
 Ambient Temp. 8 5 °F	Baro. Pressure* 24,70 in. Hg	Static Pressure - 27 in. H <sub>2</sub> 0	Impinger Gain 64.7 mL 72	Silica Gel Gain 8 5 g 15		Stack Area 14, 63 ft <sup>2</sup>		in. Total Traverse Points 16 S	
Console ID A616	Meter Corr., Y 698	Console ∆H@ (,732	obe ID/Length Pa.52 \$'	Liner Material 55	Pitot ID/Coeff. p 172 0.84	Thermo ID ' Aolo	zzle ID/Diams250 1.250 1.3	Nozzle Diam. , 250 in.	

が Mozzle ID/Diams . 250 1,25	Filter ID IUA	Sample ID Run 1	
64 min.	50 1250 1	in. Total Traverse Points	
64 min.	Nozzle ID/Diams. 25	Avg. Nozzle Diam.	
sst Personnel Sample Time	DAN/4.	Sample Time 64 min.	CLOCK

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	Final	000	~	0000		
Leak Checks	Initial	.000	00	00001		
Leak		Volume, ft <sup>3</sup>	@ Vac., in. Hg	Pitot	D	A CITATION
H <sub>2</sub> O	21	17			Filter ID	Come
- 2 (In. H20	17 ml 72	5 9		63 ft2		10
1	100	00		19,0	1	Sointo

						100												1
COMMENTS					* funt p	かってつのトンスト											,	V <sub>m-std</sub> ,
SAMPLE TRAIN VACIIIM	(in Hg)	2.5	2.5	2,5	2,5	2.5	2,5	2.5	2.5	is	~	M	M	M	3.5	2.8	2.5	Max Vac 3, 5
IMPINGER	TEMP (°F)	29	29	65	79	20	65	co	29	59	70	65	27	00	65	65	100	Max Temp
FILTER	TEMP (°F)	1															~	Min/Max
FILTER BOX	TEMP (°F)	241	253	253	254	h52	hs2	152	252	253	253	252	253	250	548	542	1250	241/254
PROBE TEMP (°F)		237	238	245	252	253	hhz	250	249	250	248	249	SYS	244	942	9h7	Uhz	237/253 241/254
	TEMP ('F)	8.3	200	78	48	58	86	98	98	38	18	88	88	89	41	-5	76	Avg Tm. 86.41
DGN/ IN,ET	TEMP ('F)														1/4		,	A
STACK	('F')	156	156	156	158	158	163	191	154	155	156	156	157	158	158	189	159	157.81
DRY GAS METER READING (ft³)	352,466	335,1	357,7	NE6361.0	363,2	365,7	368,2	371,0	373,7	376,5	374,4	341.8	384.6	381.2	340,0	343.0	395,354	42.454 Volume
ORIFICE PRESSURE AH	(in. H <sub>2</sub> O)	7.1	1,3	1,3	1,3	1.3	1,3	1.3	1.3	1,3	1,3	1.5	1	1,3	1,3	1.3	1,3/	AVG AH
VELOCITY PRESSURE AP	(in. H <sub>2</sub> O)	, 42	5);	sh'	87.	53	.51	,56	37.	153	53	84,	50	95.	. 45	, 43	¿h'	Avg \Ap
TIME (plant time)	12:30								13:06	13:04							13:41	port elevation
SAMPLE TIME (min)	0	4	∞	12	16	20	24	28	32	36	40	44	48	52	56	09	64	*Barometric Pressure is at port elevation
TRAVERSE POINT:		A-1	2	е	4	5	9	7	80	B-1	2	က	4	5	9	7	80	*Barome

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Comments

Oxygen, % Carbon Dioxide, % Moisture, % Avg VAH

Leak Check, Pre-run

Post-run

Meter Temp., °F Ref. Temp, °F

Result

Thermocouple Check

O<sub>2</sub>/CO<sub>2</sub> by Orsat Fyrite M3A

Flue Gas Composition

4757

Calculated by QC by % Isokinetic

scf Q<sub>s</sub>, dscfm

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Page 1 of 1		K Factor NA	Leak Checks	Initial	olume ft <sup>3</sup>	Vac in Ho	000	NA	D A
				7	>	10	Pitot	Filter ID	Sample ID 0 0 11
	Ambient Temp. 90 °F	* A4,70 in. Ha	Static Pressure - 27 in. H <sub>2</sub> 0	n 63.8 mL	Silica Gel Gain 4 0104:0		Stack Area 1 4, 62 H2		Points 16
, Moisture	Ambient Temp	Baro. Pressure	Static Pressure	Impinger Gair	Silica Gel Gair		Stack Area	120 250	Total Traverse
Method: EPA 4, Moisture	A016	19 88	1,732	PR5B 51	55	Pitot ID/Coeff. 0172 0.84	400	Nozzle ID/Diams. , 250 , 250 , 250	.256 in.
	Console ID	Meter Corr., Y	Console ∆H@	Probe ID/Length	Liner Material	Pitot ID/Coeff.	Thermo ID	Nozzle ID/Diams.	Avg. Nozzle Diam.
ld Data	New Indy	Catawba, SC	Pulp Dryer	stein outlet	15730.001.008	2	6/26/21	AM 1CL	64 min.
<b>Isokinetic Field Data</b>	Client	Location/Plant	Source	Sample Location	W. O. Number	Run Number	Date	Test Personnel	Sample Time 64

Final 300

000

	COMMENTS															
KUN7	SAMPLE TRAIN	(in Hg)	3,5	3.5	N.S.	3,5	3,5	h	5	5	h	5	5	5	h	5
מום	IMPINGER	TEMP (°F)	99	66	59	hg	59	62	19	99	63	2 %	200	59	54	99
Callible ID	FILTER	TEMP (°F)														
2	FILTER	TEMP (°F)	245	932	238	247	bh2	3 hz	248	244	260	252	249	249	152	252
oral Havelse Louis	PROBE TEMP (°F)		340	242	ph2	346	942	248	246	247	249	250	152	253	253	252
oral Have	DGM OUTET	TEMP ('F)	6.1	13	42	22	23	42	12	25	23	26	73	75	43	155
THE PERSON NAMED IN COLUMN	DGM	TEMP ("F)														
	STACK	( <u>E</u> )	157	158	851	159	160	-160	191	191	1 58	154	159	158	159	158
	DRY GAS METER READING (ft³)	345.500	341,8	17195	1,03,7	4063	7,97	111. 11-104 3 MIL	415,2	4(7.6	4197	421.9	425.2	428,6	431.0	433.3
	ORIFICE PRESSURE AH	(in. H <sub>2</sub> O)	1,3	5'1	1,3	1.3	1,3	1,5 41	1,3	1.3	1,3	1,3	1.3	1.3	1,3	1.3
	VELOCITY PRESSURE	(in. H <sub>2</sub> O)	1,50	.51	152	,50	77.	Lh'	Sh'	۲۲)	hh'	<i>ት</i> ነ	5)	148	.55	.53
	CLOCK TIME (plant time)	13:47								14:19	14:23					
and the second s	SAMPLE TIME (min)	0	4	æ	12	16	20	24	28	32	36	40	44	48	52	56
The state of the s	TRAVERSE POINT NO	<u>.</u>	H-1R	2	က	4	2	ဖ	7	∞	Ø-1 ∆	2	ო	4	5	9

.49348 ... SOLUTIONS, Comments

Oxygen, % Carbon Dioxide, % Moisture, %

Flue Gas Composition

Avg VAH

Total Volume Avg Ts. 442 158,81

Avg AH

Avg VAP

\*Barometric Pressure is at port elevation

.60

438.492 436,4

Thermocouple Check O<sub>2</sub>/CO<sub>2</sub> by Orsat Fyrite M3A Leak Check, Pre-run Post-run

Result Meter Temp., °F Ref. Temp, °F

Calculated by QC by % Isokinetic

V<sub>m-std</sub>,

Max N

Max Temp 660

Mip/Max

4vg Tm Min/Max Min/Max 42,25 246/25 238/260

250 251

44 44

155 158

56

9 64

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Qs, dscfm scf

15730.001.008 Drier, #3 Dujer Machine, #2-3 Sti Tve & #1-2 CBs

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1 of 1	H N	<u>\$</u>	Checks	Initia	0000	8	,000	5	un 1	
Page 1 of 1		A K Factor	Leak Leak		Volume, ft <sup>3</sup>	@ Vac., in. Hg	Pitot	Filter ID	Sample ID	
	4° 0%	24,70 in Ha	-, 27 ing H292	95.X E	4 9 6	5.プ	Stack Area 14,63 ft <sup>2</sup>		oints 16	
Moisture	Ambient Temp.	Baro. Pressure*	Static Pressure	Impinger Gain	Silica Gel Gain		Stack Area	6 .2%	Total Traverse Points	
Method: EPA 4, N	8010	AC. 488. 986	1,732	PA 513 51	55	P172 0.84	Aois	,250 ,250 ,25	.2 \$ S in.	· · · · · · · · · · · · · · · · · · ·
	Console ID	Meter Corr., Y	Console ∆H@	Probe ID/Length	Liner Material	Pitot ID/Coeff.	Thermo ID	Nozzle ID/Diams.	Avg. Nozzle Diam.	
old Data	New Indy	Catawba, SC	Pulp Dryer	year conter	15730.001.008	S,	6/26/11	ATR/66	64 min.	20010
Isokinetic Field Data	Client	Location/Plant	Source	Sample Location	W. O. Number	Run Number	Date	Test Personnel	Sample Time	

0000	5	900			COMMENTS
0000	00	000:	15	-un 1	SAMPLE
Volume, rt	@ Vac., in. Hg	Pitot		ID 0	SA EXIT
>	انه	В	Filter ID	Sample ID	EXIT
מ	,	63 ft <sup>2</sup>		16	FILTER BOX
Gall	XVIII	Stack Area 14,63 ft <sup>2</sup>		se Points	PROBE
Silica del Galil		Stack /	25	. Total Traverse Points	DGM OUTET
1	4		,250 ,256	in. To	DGM INI, ET
22	0.84	40/6		56	STACK
	PIT.	0	Nozzle ID/Diams. 1256	٦.	DRY GAS METER READING (ft³)
בוויכו ואומיכוומ	Pitot ID/Coeff. P172	Thermo ID	ID/Diams	Avg. Nozzle Diam.	
	PJE P	1	Nozzle	Avg. No	ORIFICE PRESSURE AH
		121	101	min.	VELOCITY PRESSURE AP
	2	0/10	ATL	ho	CLOCK TIME (plant time)
	Imber	Date	onnel	Sample Time (94	SAMPLE TIME (min)
	Kun Number		Test Personnel	Sample	TRAVERSE SA
					TR.

COMMENTS																		
ioo S																-	Vm-std,	SCI
SAMPLE TRAIN VACUUM (in Hg)	7,2	2.5	3.5	2,8	3,5	7	5	5	7	5	7	h	5	5	5	5	Max Vac	1
EXIT TEMP (°F)		_								West							Max Temp	
EXIT EXIT TEMP (°F)	99	19	59	59	67	19	63	63	00	62	63	63	63	49	65	59,	Min/Max	3
FILTER BOX TEMP (°F)	254	755	253	253	254	254	253	hsz	255	h52	153	252	251	253	251	250	256/255	A
PROBE TEMP (°F)	246	848	249	822	Lh7	246	922	1.42	246	245	81.2	249	250	249	249	872	56 245-659	1
DGM OUTET TEMP (°F)	63	43	63	hb	44	hb	43	55	63	43	23	44	44	hh	hb	66	Avg Tm 3 56	000
DGN INLET TEMP (°F)																/	Avg	
STACK TEMP (°F)	156	158	151	157	157	158	158	154	158	158	159	158	158	158	159	158	Avg Ts.	
DRY GAS METER READING (ft³)		9.444	447,8	450,2	(फ़ि.इ	455,5	4583	460.4	163,7	466,6	469,2	1,274	474,9	4118	480.5	483.045	Total Volume	7.0.7
ORIFICE PRESSURE AH (in. H <sub>2</sub> O)	がい、一	(,3	(,3	5	1,3	1,3	1,3	1,3	1.3	1,3	(13	1.3	1,3	n	1.3	1, 1,3	\ Avg ∆H \ ( , , , )	Asses - (41.1
VELOCITY PRESSURE AP (in. H <sub>2</sub> O)	7,	1 1 7	3Hi	95.	.52	53	,54	, 53	348	.55	.55	, 52	46.	.50	46	, 53	Avg VAP	11000
CLOCK TIME (plant time)	30.4	Steams.						15:38	15212							h)',9]	t port elevation	
SAMPLE TIME (min)	4	œ	12	16	20	24	28	32	36	40	44	48	52	56	09	64	*Barometric Pressure is at port elevation	
TRAVERSE · POINT NO.	A-1	2	က	4	2	9	7	80	B-1	2	ဇ	4	5	9	7	80	*Barome	

SOLUTIONS Comments 12 UA Integrated Air Services

15730.001.008 Pulo Dryer, ## Paper Machine, #2.3 SDTVs,& #1-2 CBs Emission Report

Calculated by QC by

Result

Os, dscfm

Thermocouple Check

O<sub>2</sub>/CO<sub>2</sub> by Orsat Fyrite M3A

Flue Gas Composition Oxygen, % Carbon Dioxide, % Moisture, %

Avg √∆H

18bh:

Leak Check, Pre-run

Post-run

Meter Temp., °F Ref. Temp, °F

% Isokinetic

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# Sample Recovery Field Data

Method: EPA 4, Moisture

Location	Client	New Indy Catawba, SC		10/	Source		r					
Location	TO A COMMENT		ngan 4 2		O. Number	15730.001.0	008					
		Шрі	ngers 1 - 3 measure	ements in grams								
Run No.			Sample Date	6/26/21	Reco	overy Date 6/20	6/21					
Sample ID	Run1		Filter ID_	NA		Analyst At						
				pingers		and the second of the						
Contents	ND DI	DI	3			Imp.Total Silica	SOCIETY SERVICE AND SERVICE AN					
Final	643.27001	780.3	643.2			gram	The second second second					
Initial	643,2	774.3	643.4			1 909						
Gain	56.91	61	1.8		71	64.7 83	VR 73 V					
Im	pinger Color	Clear			Labled?	_ 8.	3/					
Silica G	el Condition	good			Sealed?							
A DECEMBER		0										
Run No.	2		Sample Date	6/26/21	Reco	overy Date 6/2	6/21					
Sample ID	Run 2		Filter ID			Analyst AT						
Impingers Impingers												
	1	2	3			Imp.Total Silica C	Gel Total					
Contents	pt	DI	empty			gram						
Final	809.2	804.2	636.4			835,	7					
Initial	721.0	860.1	634.4			1 826	7					
Gain	88.21	4,1/	1.5			43.8 4	1102.8					
lmp	oinger Color	clear			Labled?	V						
Silica G	el Condition	used			Sealed?	-	4 N.Y. W.					
				6/0//0:								
Run No.	3			6/26/21	Reco	very Date 6/2	6/21					
Sample ID	Run3		Filter ID_	NX		Analyst AZ						
	1 1	2	3 Imp	oingers								
Contents	DI	DT	empty			Imp.Total Silica G	September 1982					
Final	718.1	785.2	646.2			922	THE RESERVE THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO I					
Initial	700.	780.3	645,2			1917,0	The second name of the second					
Gain	78/	4,9	1.0 V			83.9 4.5						
Imp	Impinger Color clear Labled?											
Silica Ge	el Condition	4 sed			Sealed?							
Check COC for Sample IDs of Media Blanks												





# Sample and Velocity Traverse Point Data Sheet - Method \*\* \*\* Data Sheet \*\* Method \*\* Data Sheet \*

Client		New Indy		Operator	VD
Loaction/Plant		Catawba, SC		Date	25-Jun-21
Source		Pulp Dryer		W.0. Number	15730.001.008
Ouct Type Fraverse Type		Circular Particulate Traverse		Rectangular Duct Velocity Traverse	Indicate appropriate type

60.125
0.125
.60
19.63
16
8

Rectangular Ducts Only									
Width of Duct, rectangular duct only (in.)									
Total Ports (rectangular duct only)									

	Traverse Point Locations										
Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)								
1	3.2	2	2								
2	10.5	6 1/2	6 1/2								
3	19.4	11 1/2	12								
4	32.3	19 1/2	19 1/2								
5	67.7	40 1/2	40 1/2								
6	80.6	48 1/2	48 1/2								
7	89.5	53 1/2	54								
8	96.8	58	58								
9											
10											
11											
12											

Equivalent Diameter = (2\*L\*W)/(L+W)

			- 1		Trave	rse Poi	int Loc	ation F	ercer	t of Sta	ack -C	ircular	W.	W.L.
			Number of Traverse Points											
			1	2	3	4	5	6	7	8	9	10	11	12
T		1		14.6		6.7	1111	4.4		3.2		2.6		2.1
1		2		85.4	HE THE	25	N. S.	14.6	11-4-	10.5	William .	8.2	ya je	6.7
a		3			149	75		29.6		19.4		14.6		11.8
v e	L	4	D. H.Y.	42.00	你值别	93.3	V of	70.4		32.3		22.6	TIME!	17.7
ı	c	5		1				85.4	1-1	67.7		34.2		25
s	a	6	3117	N/ES	1000			95.6	William.	80.6		65.8		35.6
e	t	7	11 14							89.5		77.4		64.4
P	0	8		BESSE!	M. Sala	Way.		1995		96.8	TE ST	85.4	WAY EL	75
1.	n	9										91.8		82.3
i		10	The K		TO A	Term.			102	ST W	illian.	97.4	401	88.2
n		11		777	11 = 11	4		Y	-11-	1				93.3
t		12			13 15		386		N IN	Late.		71.53		97.9

Port Diam. (in) =	
Number of Ports =	
Method 1 Version 2	

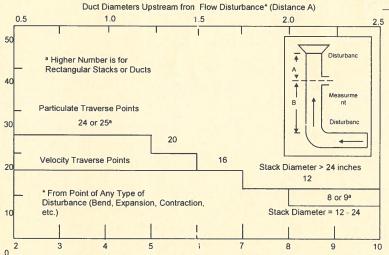
Flow Disturbances										
Upstream - A (ft)	8.75									
Downstream - B (ft)	13.125									
Upstream - A (duct diameters)	1.75									
Downstream - B (duct diameters)	2.63									

Diagram of Stack

See
Wext

Po SS

Duct Diameters Upstream fron Flow Disturbance\* (Distance A)



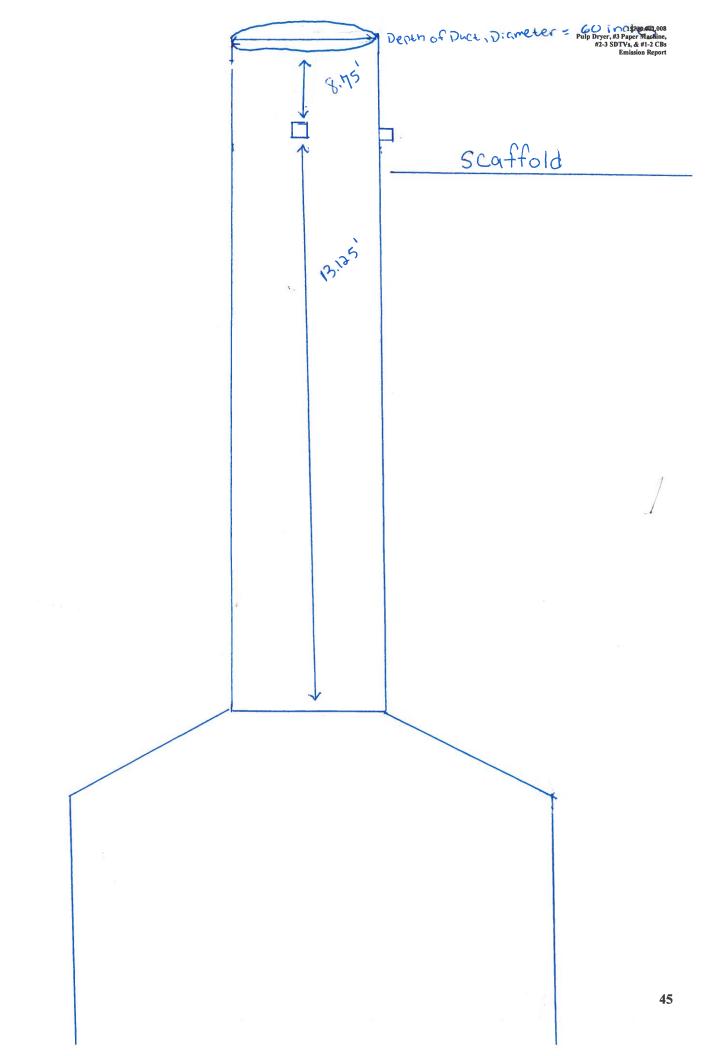
Duct Diameters Downstream from Flow Disturbance\* (Distance B)

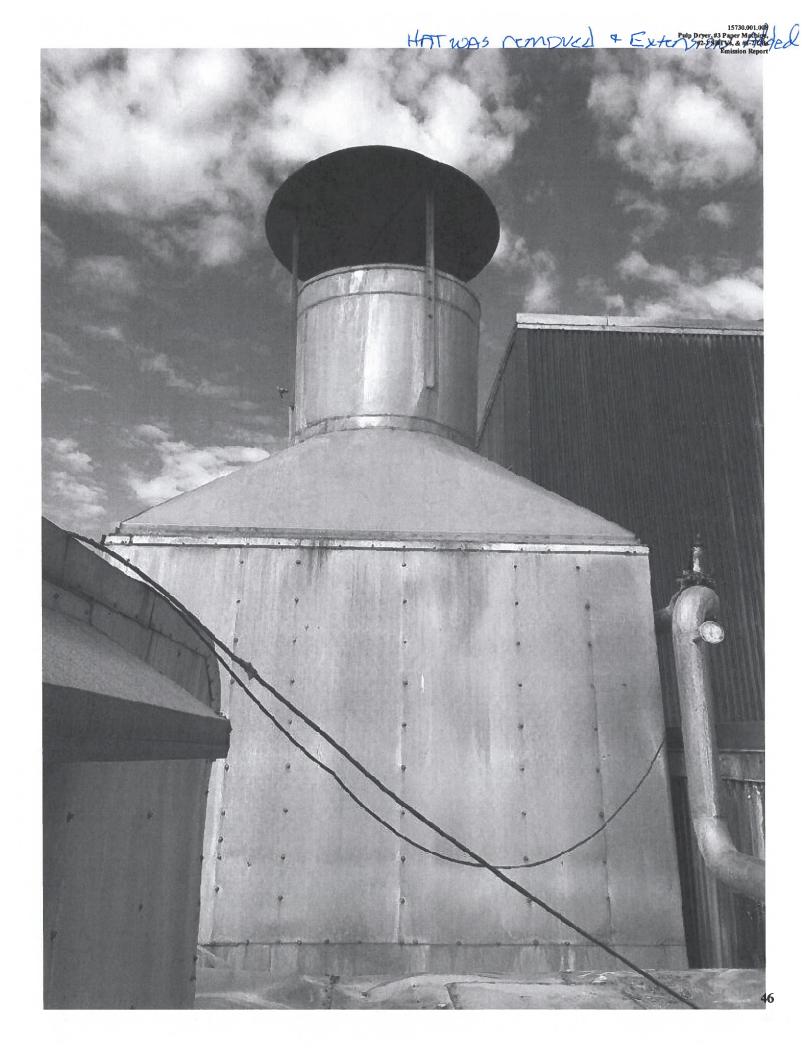
			Tr	averse	Point	Locati	ion Pe	rcent o	f Stac	k -Rec	tangul	ar	
						Numbe	er of Tra	averse	Points				
		1	2	3	4	5	6	7	8	9	10	11	12
Т	1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
ŧ	2	1.3	75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
a	3	1	200	83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
v L e o	4		0 H	1	87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
l C	5			theat		90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
s a	6	1000	Blair	Marks.	Mit le	STAN	91.7	78.6	68.8	61.1	55.0	50.0	45.8
e t	7							92.9	81.3	72.2	65.0	59.1	54.2
Po	8	HIVE	44			2310	- U.S.	3,041	93.8	83.3	75.0	68.2	62.5
Po	9								T I	94.4	85.0	77.3	70.8
i	10	199		1923	BATT	PAIN!			Sale le	78,93	95.0	86.4	79.2
n	11		0.24				111		14	NI.		95.5	87.5
t	12		The same		123	3 1		27/5	RES.		-184		95.8

Stack Points & Matrix 9 - 3 x 3 12 - 4 x 3 16 - 4 x 4 20 - 5 x 4 25 - 5 x 5 30 - 6 x 5 36 - 6 x 6 42 - 7 x 6 49 - 7 x 7

Rectangular

Tape Measure I.D. #





#### **RUN SUMMARY**

Number 1

Client: New Indy

Location: Catawba, NC

Source: Pulp Dryer

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

Date: 26 Jun 2021

Start Time 12:30

**End Time** 13:39

Average Measured TRS Conc. Recovery No. 2 TRS Corrected for Recovery 0.96 ppm 96.6 % 0.99 ppm

dis dis



#### **RUN SUMMARY**

Number 2

Client: New Indy

Location: Catawba, NC

Source: Pulp Dryer

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 26 Jun 2021

Start Time 13:47

**End Time 14:54** 

Average Measured TRS Conc. Recovery No. 2 TRS Corrected for Recovery

0.86 ppm 96.6 % 0.89 ppm

1.09

9124



#### **RUN SUMMARY**

Number 3

Client: New Indy

Location: Catawba, NC

Source: Pulp Dryer

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 26 Jun 2021

Start Time 15:06

**End Time** 16:11

Average Measured TRS Conc.

Recovery No. 2

**TRS Corrected for Recovery** 

0.80 ppm 96.6 % 0.83 ppm

3,900

9115

Number 1

		5-	TRS	mdd	1.18	1.20	1.14	1.17	1.20	1.19	1.18	1.17	1.17	1.12		1.10	1.11	1.12	1.12	1.13	1.11	1.12	1.09	1.12	1.11	1.14
1.008		121		V	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038		0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	
15730.001.008	VD	26 Jun 2021	DMDS	mdd																						
Project Number:	Operator:	Date:		area	\$	\$	<b>~</b>	<b>%</b>	?	7	<b>%</b>	<b>~</b>	<b>~</b>	7		<b>%</b>	<2	<b>%</b>	<b>~</b>	<b>%</b>	<b>~</b>	<b>%</b>	\$	<2	<2	
Project	O			v	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08		0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	
			DMS	mdd																						
	9	-		area	<2 <2	<b>%</b>	\$	<b>%</b>	<b>%</b>	<b>~</b>	7	<b>~</b>	<b>%</b>	<b>~</b>		<2	<2	7	<b>%</b>	\$	<b>%</b>	<b>~</b>	<b>%</b>	7	<b>%</b>	
	Method: 16	Calibration:																								
	_	O	MeSH	ppm	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.90		0.88	0.88	0.87	0.89	0.88	0.88	0.89	0.86	0.87	0.87	
				area	92	96	92	92	92	92	92	94	94	92		88	88	88	91	68	88	91	86	87	87	
					0.11	0.13	0.07	0.11	0.13	0.12	0.11	0.11	0.11	0.07		0.07	0.07	0.09	0.07	60.0	0.07	0.08	0.07	0.10	0.08	60.0
			ω.	٧			0.07							0.02	ge	0.07	0.07		0.07		0.07		0.07			
<u>&gt;</u>	a, NC		H <sub>2</sub> S	mdd	0.11	0.13		0.11	0.13	0.12	0.11	0.11	0.11		Paused for port change			0.09		0.09		0.08		0.10	0.08	
New Indy	Catawba, NC	Pulp Dryer		area	ည	9	<b>%</b>	4	7	9	2	2	4	<b>~</b>	sed for p	7	<b>~</b>	က	7	က	<2	7	<b>~</b>	4	2	
Client:	Location:	Source:		Time	12:30	12:33	12:36	12:39	12:42	12:45	12:48	12:51	12:54	12:57	Par	13:09	10:33	13:15	13:18	13:21	13:24	13:27	13:30	13:33	13:36	Averages

Number 2

	TRS	maa	1.07	1.05	1.07	1.06	1.07	1.07	1.09	1.05	1.04	1.04	1.03	1.02	1.05	1.04	1.03	1.03	1.04	1.06	1.04	1.02	1.05
1.008		V	0.038	0.038		0.038	0.038	0.038	0.038	0.038		0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	
15730.001.008 VD 26 Jun 2021	DMDS	mda			0.04						0.04												
Project Number: Operator: Date:		area	\$	<b>%</b>	2	<b>~</b>	7	?	<b>~</b>	7	2	<b>%</b>	7	<b>%</b>	<2	<b>%</b>	7	<b>~</b>	?	<b>%</b>	<2	<b>%</b>	
Project I		V	0.08	0.08	0.08		0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	
	DMS	mdd				0.08																	
<b>~</b> ~		area	\$	<b>%</b>	<b>%</b>	7	<2	<b>~</b>	<b>~</b>	<b>~</b>	<b>4</b>	<b>4</b>	<b>~</b>	<b>~</b>	<2	<b>~</b>	<b>~</b>	<2	<2	<b>~</b>	<b>~</b>	<2	
Method: 16 Calibration:		v																					
≥ %	MeSH	ppm	0.83	0.83	0.83	0.83	0.82	0.82	0.83	0.82	0.81	0.82	0.80	0.79	0.81	0.81	0.81	0.80	0.81	0.81	0.81	0.79	
		area	79	79	80	80	79	79	79	78	22	77	74	73	22	9/	9/	75	75	27	27	73	
			60.0	0.07	0.07	0.07	0.09	60.0	0.11	0.07	0.07	0.07	0.07	0.07	0.09	0.07	0.07	0.07	0.08	0.09	0.07	0.07	0.08
	S.	<b>v</b>		0.07	0.07	0.02				0.07	0.07	0.07	0.07	0.07		0.07	0.07	0.07			0.07	0.07	
y a, NC /er	H <sub>2</sub> S	ppm	0.09				0.09	0.09	0.11						0.09				0.08	0.09			
New Indy Catawba, NC Pulp Dryer		area	က	<b>%</b>	<b>~</b>	<b>~</b>	က	က	4	7	7	7	<b>~</b>	<b>~</b>	က	<b>%</b>	<b>%</b>	<b>~</b>	2	က	<b>~</b>	<2	
Client: Location: Source:		Time	13:47	13:50	13:53	13:56	13:59	14:02	14:05	14:08	14:11	14:14	14:24	14:27	14:30	14:33	14:36	14:39	14:42	14:45	14:48	14:51	Averages

Number 3

			TRS	maa	00.	1.01	1.01	1.02	1.03	1.03	1.03	1.03	1.04	1.04	1.00	1.01	1.00	1.01	1.00	1.01	1.03	1.01	1.00	1.00	1.02
.008		21		v		0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	
15730.001.008	ΔV	26 Jun 2021	DMDS	mdd	0.04																				
Jumber:	Operator:	Date:		area	2	<b>%</b>	<b>%</b>	\$	<b>~</b>	\$	<2	<b>~</b>	<2	<b>~</b>	<b>%</b>	7	<2	<b>~</b>	7	<b>%</b>	<2	<2	<b>~</b>	<2	
Project Number:	0			٧	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	
			DMS	mdd																					
	"	-		area	\$	7	7	7	<2	<2	7	<b>%</b>	<b>%</b>	<b>~</b>	<b>~</b>	<2	7	7	<b>%</b>	<2	<2	<b>~</b>	<2	<2	
	Method: 16	Calibration:		v																					
	Σ	Ca	MeSH	mdd	0.77	0.79	0.78	0.79	0.81	0.80	0.80	0.81	0.80	0.80	0.78	0.78	0.77	0.79	0.78	0.78	0.80	0.78	0.77	0.78	
				area	89	72	71	73	75	74	74	22	75	22	20	71	69	72	20	20	74	71	69	20	
					0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.07	0.07	0.02	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.02
			ω.	<b>v</b>	0.07	0.07	0.07	0.07	0.02	0.07	0.07	0.07			0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	
>	a, NC		H <sub>2</sub> S	ppm									0.08	0.08											
New Indy	Catawba, NC	Pulp Dryer		area	<2	7	<b>~</b>	7	<b>~</b> 5	<b>~</b>	<b>~</b>	<b>~</b>	7	က	7	7	<b>~</b>	<b>~</b>	<b>~</b>	7	<b>~</b>	<b>~</b>	<b>~</b>	<2 	
Client:	Location:	Source:		Time	15:06	15:09	15:12	15:15	15:18	14:24	15:24	15:27	15:30	15:33	15:41	15:44	15:47	15:50	15:53	15:56	15:59	16:02	16:05	16:08	Averages

Number 1

Client: New Indy

Location: Catawba, NC Source: Pulp Dryer

Method 16 Calibration 1 Project Number: 15730.001.008
Operator: VD

Time	H area	I <sub>2</sub> S ppm	Me area	SH ppm	D area	MS ppm	DN area	/IDS ppm	TRS ppm
 12:30	5	0.11	95	0.91	<2	<0.080	<2	<0.038	1.02
12:33	6	0.13	96	0.91	<2	<0.080	<2	< 0.038	1.04
12:36	<2	< 0.070	95	0.91	<2	<0.080	<2	< 0.038	0.91
12:39	4	0.11	95	0.91	<2	<0.080	<2	< 0.038	1.02
12:42	7	0.13	95	0.91	<2	< 0.080	<2	< 0.038	1.04
12:45	6	0.12	95	0.91	<2	< 0.080	<2	< 0.038	1.04
12:48	5	0.12	95	0.91	<2	< 0.080	<2	< 0.038	1.02
12:51	5	0.11	94	0.91	<2	<0.080	<2	< 0.038	1.01
12:54	4	0.11	94	0.91	<2	<0.080	<2	< 0.038	1.01
12:57	<2	<0.070	92	0.90	<2	<0.080	<2	< 0.038	0.90
12.07	~_	40.070		sed for p				10.000	0.00
13:09	<2	< 0.070	88	0.88	<2	<0.080	<2	<0.038	0.88
13:12	<2	< 0.070	89	0.88	<2	<0.080	<2	< 0.038	0.88
13:15	3	0.09	88	0.87	<2	<0.080	<2	< 0.038	0.97
13:18	<2	<0.070	91	0.89	<2	<0.080	<2	< 0.038	0.89
13:21	3	0.09	89	0.88	<2	<0.080	<2	< 0.038	0.97
13:24	<2	< 0.070	89	0.88	<2	<0.080	<2	< 0.038	0.88
13:27	2	0.08	91	0.89	<2	<0.080	<2	< 0.038	0.97
13:30	<2	< 0.070	86	0.86	<2	<0.080	<2	<0.038	0.86
13:33	4	0.10	87	0.87	<2	<0.080	<2	<0.038	0.97
13:36	2	0.08	87	0.87	<2	<0.080	<2	<0.038	0.95
Average		<0.070		0.89		<0.080		<0.038	0.96



Number 2

Client: New Indy Location: Catawba, NC Source: Pulp Dryer

Method 16 Calibration 1 Project Number: 15730.001.008
Operator: VD

Time	H area	I <sub>2</sub> S ppm	Me area	SH ppm	D area	MS ppm	DN area	/IDS ppm	TRS ppm
 13:47	3	0.09	79	0.83	<2	<0.080	<2	<0.038	0.92
	<2	<0.09	79 79	0.83	<2	<0.080	<2	<0.038	0.83
13:50 13:53		<0.070	79 80	0.83	<2	<0.080	2	0.036	0.83
	<2				2				
13:56	<2	<0.070	80	0.83		0.08	<2	<0.038	0.92
13:59	3	0.09	79	0.82	<2	<0.080	<2	<0.038	0.91
14:02	3	0.09	79	0.82	<2	<0.080	<2	<0.038	0.91
14:05	4	0.11	79	0.83	<2	<0.080	<2	<0.038	0.93
14:08	<2	< 0.070	78	0.82	<2	<0.080	<2	<0.038	0.82
14:11	<2	< 0.070	75	0.81	<2	<0.080	2	0.04	0.89
14:14	<2	< 0.070	77	0.82	<2	<0.080	<2	< 0.038	0.82
14:24	<2	< 0.070	74	0.80	<2	< 0.080	<2	< 0.038	0.80
14:27	<2	< 0.070	73	0.79	<2	<0.080	<2	< 0.038	0.79
14:30	3	0.09	75	0.81	<2	<0.080	<2	< 0.038	0.89
14:33	<2	<0.070	76	0.81	<2	<0.080	<2	<0.038	0.81
14:36	<2	< 0.070	76	0.81	<2	<0.080	<2	<0.038	0.81
14:39	<2	< 0.070	75	0.80	<2	<0.080	<2	<0.038	0.80
14:42	2	0.08	75	0.81	<2	<0.080	<2	<0.038	0.88
14:45	3	0.00	77	0.81	<2	<0.080	<2	<0.038	0.90
14:48	<2	< 0.070	77	0.81	<2	<0.080	<2	<0.038	0.81
14:51	<2	<0.070	73	0.79	<2	<0.080	<2	<0.038	0.79
Average		<0.070		0.81		<0.080		<0.038	0.86 🗸





Number 3

Client: New Indy

Location: Catawba, NC Source: Pulp Dryer

Method 16 Calibration 1 Project Number: **15730.001.008**Operator: **VD** 

Time	H area	l₂S ppm	Me area	SH ppm	D area	MS ppm	DN area	/IDS ppm	TRS ppm
 15:06	<2	<0.070	68	0.77	<2	<0.080	2	0.04	0.85
15:09	<2	< 0.070	72	0.79	<2	<0.080	<2	<0.038	0.79
15:12	<2	< 0.070	71	0.78	<2	<0.080	<2	<0.038	0.78
15:15	<2	< 0.070	73	0.79	<2	<0.080	<2	<0.038	0.79
15:18	<2	< 0.070	75	0.81	<2	<0.080	<2	<0.038	0.81
15:21	<2	< 0.070	74	0.80	<2	<0.080	<2	<0.038	0.80
15:24	<2	< 0.070	74	0.80	<2	<0.080	<2	< 0.038	0.80
15:27	<2	< 0.070	75	0.81	<2	<0.080	<2	< 0.038	0.81
15:30	2	0.08	75	0.80	<2	<0.080	<2	< 0.038	0.88
15:33	3	0.08	75	0.80	<2	<0.080	<2	< 0.038	0.89
15:41	<2	< 0.070	70	0.78	<2	<0.080	<2	<0.038	0.78
15:44	<2	< 0.070	71	0.78	<2	< 0.080	<2	< 0.038	0.78
15:47	<2	< 0.070	69	0.77	<2	< 0.080	<2	< 0.038	0.77
15:50	<2	< 0.070	72	0.79	<2	<0.080	<2	< 0.038	0.79
15:53	<2	< 0.070	70	0.78	<2	< 0.080	<2	<0.038	0.78
15:56	<2	< 0.070	70	0.78	<2	<0.080	<2	<0.038	0.78
15:59	<2	< 0.070	74	0.80	<2	< 0.080	<2	< 0.038	0.80
16:02	<2	< 0.070	71	0.78	<2	<0.080	<2	<0.038	0.78
16:05	<2	< 0.070	69	0.77	<2	<0.080	<2	<0.038	0.77
16:08	<2	<0.070	70	0.78	<2	<0.080	<2	<0.038	0.78
Average		<0.070		0.79		<0.080		<0.038	0.80





Number 0

Client: New Indy Location: Catawba, NC Source: Pulp Dryer

Method 16 Calibration 1 Project Number: 15730.001.008
Operator: VD

Time	H <sub>2</sub>	2S	Me	SH	D	MS	DN	<b>IDS</b>	TRS
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
			C	C416806 7	7.257 pp	om /			
09:13	13230	7.45	<2	<0.12	<2	<0.080	<2	<0.038	7.45
09:16	13533	7.54	<2	< 0.12	<2	<0.080	<2	<0.038	7.54
09:19	13251	7.45	<2	<0.12	<2	<0.080	<2	<0.038	7.45
Average		7.48		<0.12		<0.080		<0.038	7.48





#### **RECOVERY DATA**

Number 1

Client: New Indy
Location: Catawba, NC
Source: Pulp Dryer

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 26 Jun 2021

Before Run 1

Start Time 10:47 End Time 11:08

Recovery Gas to Probe, Time 10:47

 Peak Areas, mv-sec
 Average
 ppm

 11865
 11836
 11866
 11856
 7.03

Recovery Gas to GC, Time 11:06

 Peak Areas, mv-sec
 Average ppm

 14001
 14035
 13928
 13988
 7.67

Recovery 91.6%





#### **RECOVERY DATA**

Number 2

Client: New Indy

Location: Catawba, NC Source: Pulp Dryer

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 26 Jun 2021

After Run 3 Before Run 4

Start Time 16:11

**End Time** 16:23

Recovery Gas to Probe, Time 16:11

Peak Areas, mv-sec

12698

12844

13017

Average

ppm

12853 / 7.33

Recovery Gas to GC, Time 16:20

Peak Areas, mv-sec

13674

13559

13930

Average

ppm

13721 / 7.59

Recovery 96.6%

### **CALIBRATION DATA**

Number 1

Client: New Indy

Project Number: 15730.001.008

Location: Catawba, NC

Operator: **VD** 

Source: Pulp Dryer

Method 16

Ambient	Temperature: 72°C	Barometric P	ressure: 29.70 in.	Hg
Analyte	H <sub>2</sub> S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	346	363	470	238
Ret. Time, sec	16.0	22.5	48.0	127.0
1 Flow = 38.9 mL/Min	<b>9.00</b> ppm	<b>9.36</b> ppm	12.1 nnm	6 12 nnm
	<b>8.90</b> ppm		12.1 ppm	<b>6.12</b> ppm
Time: 06:02	10000	Peak Area	_ · · _ · _ · _ · _ · _ · · _ · · _ · · _ ·	0.4750
	18368	8795	28785	34758
	18368	8383	27462	34707
	18202	8971	28270	35006
Average Area	18313 🗸	8716 /	28172	34824 /
2 Flow = 82.3 mL/Min	<b>4.21</b> ppm	<b>4.42</b> ppm	<b>5.72</b> ppm	<b>2.89</b> ppm
Time: 07:54		Peak Area	s, mv-sec	
	4512	2067	6969	8481
	4642	2032	7036	8510
	4706	2195	7080	8577
Average Area	<b>4620</b> /	2098	<b>7028</b> /	8523 /
3 Flow = 175 mL/Min	<b>1.98</b> ppm	<b>2.08</b> ppm	<b>2.69</b> ppm	<b>1.36</b> ppm
Time: 08:29		Peak Area	s, mv-sec	
	1065	476	1647	1910
	1045	464	1599	1954
	1126	467	1556	1919
Average Area	1079	469	1601	1928 /



#### **CALIBRATION SUMMARY**

Number 1

Client: New Indy

Project Number: 15730.001.008

Location: Catawba, NC Source: Pulp Dryer

Operator: **VD** Date: 25 Jun 2021

Method 16

H <sub>2</sub> S	1	2	3			
Time	06:02	07:54	08:29			
Concentration, ppm	8.90	4.21	1.98			
Area, mv-sec	18313 -	4620	1079			
Calc. Conc., ppm	8.85	4.26	1.97			
% Error	-0.6	1.2	-0.6			
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.	
	1.8832	2.4794	0.9999	2	0.070	
		_				
MeSH	1	2	3			
Time	06:02	07:54	08:29			
Concentration, ppm	9.36	4.42	2.08			
Area, mv-sec	8716	2098	469			
Calc. Conc., ppm	9.31	4.47	2.07			
% Error	-0.5	1.1	-0.5		m 4 11	
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.	
	1.9432	2.0579	0.9999	2	0.12	
DMS	1	2	3			
Time	06:02	07:54	08:29			
Concentration, ppm	12.1	5.72	2.69			
Area, mv-sec	28172	7028	1601			
Calc. Conc., ppm	12.0	5.80	2.67			
% Error	-0.7	1.4	-0.7			
<b>Calibration Curve</b>	Slope	Intercept		Min. Area	Det. Lim.	
	1.9072	2.3902	0.9999	2	0.080	
DMDS	1	2	3			
Time	06:02	07:54	08:29			
Concentration, ppm	6.12	2.89	1.36			
Area, mv-sec	34824	,	1928			
Calc. Conc., ppm	6.08	2.93	1.35			
7 1 1	-0.6	1.2	-0.6			
% Error	-0.0	1.4	-0.0			
% Error Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.	





### **CALIBRATION DATA**

Number 2

Client: New Indy

Project Number: 15730.001.008

Operator: **VD** 

Location: Catawba, NC Source: Pulp Dryer

Method 16 Date: 26 Jun 2021

Ambient	Temperature: 72°C	<b>Barometric F</b>	Pressure: 29.70 in.	Hg
Analyte	H <sub>2</sub> S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	346	363	470	238
Ret. Time, sec	16.0	22.5	48.0	127.0

<b>9.32</b> ppm	<b>9.79</b> ppm	<b>12.7</b> ppm	<b>6.41</b> ppm
	Peak Area	s, mv-sec	
17531	8727	27825	33485
17951	8703	27443	33712
18066	8758	27669	33342
17849 🗸	8730	27646	33513
<b>4.41</b> ppm	<b>4.63</b> ppm	<b>5.99</b> ppm	<b>3.03</b> ppm
	Peak Area	s, mv-sec	
4366	2153	6888	8191
4464	2149	6729	8050
4361	2131	6827	8110
<b>4397</b> /	2145	6815	8117
<b>2.01</b> ppm	<b>2.11</b> ppm	<b>2.73</b> ppm	<b>1.38</b> ppm
	Peak Area	s, mv-sec	
1026	464	1561	1864
980	466	1558	1873
996	463	1569	1872
1001	464	1563	1870
	17531 17951 18066 17849 4.41 ppm 4366 4464 4361 4397 2.01 ppm	Peak Area   17531   8727   17951   8703   18066   8758   8730	Peak Areas, mv-sec         17531       8727       27825         17951       8703       27443         18066       8758       27669         17849       8730       27646         Peak Areas, mv-sec         4366       2153       6888         4464       2149       6729         4361       2131       6827         4397       2145       6815         2.01 ppm       2.73 ppm         Peak Areas, mv-sec         1026       464       1561         980       466       1558         996       463       1569

#### **CALIBRATION SUMMARY**

Number 2

Project Number: 15730.001.008

Client: New Indy Location: Catawba, NC

Operator: **VD** Date: 26 Jun 2021

Source: Pulp Dryer Method 16

H <sub>2</sub> S	1	2	3		
Time	07:00	08:24	08:47		
Concentration, ppm	9.32	4.41	2.01		
Area, mv-sec	17849 .	4397	1001 .		9
Calc. Conc., ppm	9.31	4.42	2.01		
% Error	-0.1	0.2	-0.1		
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8784	2.4316	>0.9999	2	0.073
MeSH	11	2	3		
Time	07:00	08:24	08:47		
Concentration, ppm	9.79	4.63	2.11 -		
Area, mv-sec	8730 -	2145	464 ′		
Calc. Conc., ppm	9.74	4.68	2.10		
% Error	-0.5	1.0	-0.5		
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9131	2.0496	0.9999	2	0.12
DMS	1	2	3		
Time	07:00	08:24	08:47		
Concentration, ppm	12.7	5.99	2.73		
Area, mv-sec	27646	6815	1563 <sup>-</sup>		
Calc. Conc., ppm	12.7	6.00	2.73		
% Error	-0.1	0.1	-0.1		
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8729	2.3765	>0.9999	2	0.078
DMDS	1	2	3		
Time	07:00	08:24	08:47		
Concentration, ppm	6.41	3.03	1.38		
Area, mv-sec	33513	0117	1870		
Calc. Conc., ppm	6.42	3.02	1.38		
% Error	0.1	-0.3	0.1		
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8815	3.0064	>0.9999	2	0.036





#### ANALYTES AND STANDARDS

Client: New Indy

Location: Catawba, NC

Source: Pulp Dryer

Method 16

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

<b>H₂S</b> 34.08	<b>MeSH</b> 48.11	<b>DMS</b> 62.14	<b>DMDS</b> 94.20
16.0	22.5	48.0	127.0
3.0	7.0	10.0	10.0
2	2	2	2
1	1	1	1
1.0	1.0	2.0	3.0
2.0	6.0	4.0	5.0
T-51828 /	33-53274	89-53332	89-53266/
483	716 🗸	1197 🦯	918
346	363	470	238
	34.08 16.0 3.0 2 1 1.0 2.0 T-51828 483	34.08 48.11  16.0 22.5 3.0 7.0 2 2 1 1 1 1.0 1.0 2.0 6.0  T-51828 33-53274 483 716	34.08 48.11 62.14  16.0 22.5 48.0 3.0 7.0 10.0 2 2 2 2 1 1 1 1 1.0 1.0 2.0 2.0 6.0 4.0  T-51828 33-53274 89-53332 483 716 89-53332

Barometric Pressure: 29.70 in. Hg **Ambient Temperature:** 72 °F

No Oxygen Correction

PR<sub>nl</sub> =  $PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^{\circ} + T_a) / T_s] \times (P_s / P_b)$ 

Where:

PR<sub>ni</sub> = Permeation Rate by volume, nL/min = Permeation Rate by weight, ng/min PRna

= Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole  $V_{mol}$ 

= Molecular Weight of compound Wmol

= Ambient Temperature, °F Ta

= Standard Temperature = 492°R (32 °F) T

= Standard Pressure = 29.92 in Hg Ps

= Barometric Pressure, in Hg  $P_b$ 

For example, H<sub>2</sub>S:

PR<sub>nl</sub>  $= 483 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.70)$ = 346 nL/min

To calclate concentrations:

 $= PR_{nl} / F_{d}$ C

Where:

= Concentration, ppmv C

PR<sub>nl</sub> = Permeation Rate by volume, nL/min

= Flow rate of diluent, mL/min Fd

<sup>\*</sup>Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min. Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

#### **INSTRUMENT INFORMATION**

Client: New Indy

· Cetewho NC

Location: Catawba, NC

Source: Pulp Dryer Method 16

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

File: C:\Data\210626 New Indy Catawba Pulp Dryer.trs

Program Version: 2.0, built 15 May 2017 File Version: 2.0

Computer: WLT5 Trailer: 281

Analog Input Device: MCC USB-1608G GC (

GC Channel: 16

Sampling Rate: 0.050 sec.

Data Interval: 0.5 sec.

Gas Chromatograph: Shimadzu GC8-A Serial No. C10493615061

**Detector Range: 10** 

	Gases		Temperatures, °C	Columns
	Press. psi	Flow mL/min	Column: 140	Primary: Carbopack
$H_2$	30	50	Detector: 140	Secondary: N/A
Air	30	60		Sample Loop: 4"
Carrier	50	30		•

#### **Injection Cycle**

Total Length: 180 sec Sampling Time: 170 sec Load/Backflush Time: 80 sec

#### **Default Integration Parameters**

Signal Threshold 0.67 mv Peak detection window ±10 sec Minimum peak area 2 mv-sec Minimum peak height 1 mv above baseline

#### **Dynacalibrator**

Chamber Temperature 50.0°C

Ambient Temperature 72.0°F

Barometric Pressure 29.70 in. Hq

Number 1

Calibration 1

Client: New Indy Location: Catawba, SC

Source: Pulp Dryer

Project Number: 15730.001.008

Operator: **VD** 

Time	(	O <sub>2</sub>	С	O <sub>2</sub>
Time	mv	%	mv	%
	Pulp [	Oryer R	un 1	
13:37:0	08 7063	20.8	-8	0.0
13:37:1	8 7062	20.8	-6	0.0
13:37:2	28 7061	20.8	-5	0.0
13:37:3	38 7061	20.8	-5	0.0
13:37:4	18 7062	20.8	-5	0.0
13:37:5	7061	20.8	-5	0.0
13:38:0	08 7061	20.8	-6	0.0
13:38:1	8 7061	20.8	-8	0.0
13:38:2	28 7061	20.8	-8	0.0
13:38:3	38 7061	20.8	-6	0.0
13:38:4	18 7062	20.8	-5	0.0
13:38:5	7061	20.8	-5	0.0
Avgs	7061	20.8	-6	0.0

Number 2

Calibration 1

Client: New Indy

Location: Catawba, SC

Source: Pulp Dryer

Project Number: 15730.001.008

Operator: **VD** 

Time	C	2	C	O <sub>2</sub>
Time	mv	%	mv	%
	Pulp D	ryer Ru	n 2	
14:57:11	7115	20.9	-5	0.0
14:57:21	7115	20.9	-5	0.0
14:57:31	7115	20.9	-5	0.0
14:57:41	7116	20.9	-5	0.0
14:57:51	7115	20.9	-5	0.0
14:58:01	7116	20.9	-8	0.0
14:58:11	7116	20.9	-5	0.0
14:58:21	7114	20.9	-5	0.0
14:58:31	7116	20.9	-5	0.0
14:58:41	7115	20.9	-5	0.0
14:58:51	7114	20.9	-5	0.0
14:59:01	7114	20.9	-5	0.0
Avgs	7115	20.9	-5	0.0

Number 3

Client: New Indy Location: Catawba, SC

Source: Pulp Dryer Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

<b>T</b> :	T: O <sub>2</sub>		C	O <sub>2</sub>
Time	mv	%	mv	%
	Pulp D	ryer Ru	n 3	
16:13:58	7118	20.9	-6	0.0
16:14:08	7118	20.9	-5	0.0
16:14:18	7116	20.9	-5	0.0
16:14:28	7118	20.9	-5	0.0
16:14:38	7116	20.9	-5	0.0
16:14:48	7116	20.9	-5	0.0
16:14:58	7117	20.9	-7	0.0
16:15:08	7118	20.9	-8	0.0
16:15:18	7118	20.9	-6	0.0
16:15:28	7118	20.9	-5	0.0
16:15:38	7115	20.9	-5	0.0
16:15:48	7118	20.9	-5	0.0
Avgs	7117	20.9	-6	0.0

#### CALIBRATION DATA

Number 1

Client: New Indy Location: Catawba, SC Source: Pulp Dryer

Project Number: 15730.001.008

Operator: **VD** 

Date: 26 Jun 2021

Start Time: 10:58

 $O_2$ 

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

Result, mv Cylinder ID Zero -5 10.1 1/ XC013544B 3430 20.2 N CC275468 6891

**Curve Coefficients** 

Slope Intercept 340.7 -12

%

Corr. Coeff. >0.9999

CO<sub>2</sub> Method: EPA 3A

Calibration Type: Linear Regression

**Calibration Results** 

% Cylinder ID Result, mv Zero -7 10.2 V XC013544B 4123 20.3 CC275468 8231

**Curve Coefficients** 

Slope Intercept Corr. Coeff. 406.4 1.0000 -7





### **CALIBRATION ERROR DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Pulp Dryer

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 26 Jun 2021

Start Time: 10:58

 $O_2$ 

Method: EPA 3A

Span Conc. 20.2 %

**Slope** 340.7

Intercept -11.6

Standard %	Response mv	Result	Difference %	Error %	Status
Zero	-5	0.0	0.0	0.0	Pass
10.1	3430	10.1	0.0	0.0	Pass
20.2	6891	20.3	0.1	0.5	Pass

 $CO_2$ 

Method: EPA 3A

Span Conc. 20.3 %

**Slope** 406.4

Intercept -6.7

Standard         Response mv         Result %         Difference %           Zero         -7         0.0         0.0           10.2         4123         10.2         0.0           20.3         8231         20.3         0.0	% 0.0 0.0 0.0	Status Pass Pass Pass
--	------------------------	-----------------------





#### **CALIBRATION ERROR DATA**

Number 2

Client: New Indy

Project Number: 15730.001.008

Operator: **VD** 

Location: Catawba, SC

Source: Pulp Dryer

Date: 26 Jun 2021

Calibration 1

Start Time: 16:23

 $O_2$ 

Method: EPA 3A

Span Conc. 20.2 %

**Slope** 340.7

Intercept -11.6

Standard %	Response mv	Result	Difference %	Error %	Status
Zero	-5	0.0	0.0	0.0 🗸	Pass
10.1	3430	10.1	0.0	0.0 🗸/	Pass
20.2	6891	20.3	0.1	0.5	Pass

 $CO_2$ 

Method: EPA 3A

Span Conc. 20.3 %

**Slope** 406.4

Intercept -6.7





#### **METHODS AND ANALYZERS**

Client: New Indy

Location: Catawba, SC

Source: Pulp Dryer

Project Number: 15730.001.008

Operator: **VD** 

Date: 26 Jun 2021

File: C:\Data\210626 New Indy Catawba Pulp Dryer.cem
Program Version: 2.2, built 3 Jul 2020 File Version: 2.04
Computer: WSAUBCHEMLABGC1 Trailer: 281

**Analog Input Device:** Keithley KUSB-3108

Channel 1

Analyte O<sub>2</sub>

Method EPA 3A, Using Bias Analyzer Make, Model & Serial No. Teledyne T802 s/n: 172

Full-Scale Output, mv
Analyzer Range, %
Span Concentration, %
10000
25.0
20.2

Channel 2

Analyte CO<sub>2</sub>

Method EPA 3A, Using Bias

Analyzer Make, Model & Serial No. **Teledyne T802 s/n: 172** Full-Scale Output, mv **10000** 

Analyzer Range, % 25.0 Span Concentration, % 20.3



# APPENDIX D FIELD DATA – No. 3 PAPER MACHINE



## APPENDIX D

## VENT 1

New Indy Catawba, SC

15730.001.008 No. 1 Hood Exhaust Paper Machine Vent 1

#### **EMISSION CALCULATIONS**

Date Time Began Time Ended	Run 1 6/25/21 755 855	Run 2 6/25/21 900 1000	Run 3 6/25/21 1005 1105	
Volumetric Flow Rate, (Qs), DSCFM BWS % Oxygen Recovery, %	3.50E+04 0.188 20.2 97.6	0.188 20.2	0.182	3.48E+04 0.186 20.2 97.6
Total Reduced Sulfur (TRS MW)= 34.  Concentration, ppm Emission Rate, lb/hr	0.58 0.11	0.64 0.12	0.69 0.13	0.64 0.12
H2S (H2S MW)= 34.  Concentration, ppm Concentration, ppm (Corrected for Recove Emission Rate, lb/hr	0.18	0.21 0.22 0.04	0.21 0.22 0.04	0.20 0.20 0.20 0.04

New Indy Catawba, SC 15730.001.008 No. 1 Hood Exhaust

## **Paper Machine Vent 1**

SOKINETIC CALCULATIONS	
Date	
Time Began         755	Mean
Time Ended   R844	
INPUT DATA	
Sampling Time, min         (Theta)         48.0         48         48           Stack Diameter, in.         (Dia.)         50.00 √         50.00 √         50.00 √           Barometric Pressure, in. Hg         (Pb)         29.68 √         29.68 √         29.68 √           Static Pressure, in. H2O         (Pg)         -0.65 √         -0.68 √         -0.68 √           Pitot Tube Coefficient         (Cp)         0.84 √         0.84 √         0.84 √           Meter Correction Factor         (Y)         1.0030 √         1.0030 √         1.0030 √           Orifice Calibration Value         (Delta H@)         1.8000 √         1.8000 √         1.8000 √           Nozzle Diameter, in.         (Dn)         0.250 √         0.250 √         0.250 √         0.250 √           Meter Volume, ft°3         (Vm)         29.740 √         29.705 √         30.008 √           Meter Temperature, °F         (Tm)         62.2 √         69.8 √         75.6 √           Meter Temperature, °R         (Tm-R)         522.2          529.8 535.6         535.6           Meter Orifice Pressure, in. H2O         (Delta H)         1.300 √         1.300 √         1.300 √           Ave Sq Rt Orifice Press, (in. H2O)°½         (Delta H)         1.300 √         1.4140	
Stack Diameter, in.         (Dia.)         50.00 / 50.00         50.00           Barometric Pressure, in. Hg         (Pb)         29.68 / 29.69 / 29.70 / 20.25	40
Barometric Pressure, in. Hg	48
Static Pressure, in. H2O         (Pg)         -0.65 / 0.68 / 0.84 / 0.84         -0.68 / 0.84 / 0.84           Pitot Tube Coefficient         (Cp)         0.84 / 0.84 / 0.84 / 0.84         0.84 / 0.84           Meter Correction Factor         (Y)         1.0030 / 1.0030 / 1.0030 / 1.0030 / 1.0030         1.0030 / 1.0030 / 1.0030 / 1.0030 / 1.0030 / 1.0030 / 1.0030 / 1.0030 / 1.0030 / 1.0030 / 1.0030 / 1.0030 / 1.00000 / 1.0000 / 1.0000 / 1.0000 / 1.00000 / 1.0000 / 1.0000 / 1.0000 / 1.0000	50.00
Pitot Tube Coefficient (Cp) 0.84	29.68
Meter Correction Factor         (Y)         1.0030	-0.67
Orifice Calibration Value         (Delta H@)         1.8000         1.8000         1.8000           Nozzle Diameter, in.         (Dn)         0.250         0.250         0.250           Meter Volume, ft^3         (Vm)         29.740         29.705         30.008           Meter Volume, ft^3         (Vm)         29.740         29.705         30.008           Meter Temperature, °F         (Tm)         62.2         69.8         75.6           Meter Temperature, °R         (Tm-R)         522.2         529.8         535.6           Meter Orifice Pressure, in. H2O         (Delta H)         1.300         1.300         1.300           Ave Sq Rt Orifice Press, (in. H2O)^½         ((Delta H)½)avg)         1.140         1.140         1.140           Volume H2O Collected, mL         (Vlc)         147.7         145.6         139.1           CO2 Concentration, %         (CO2)         0.2         0.2         0.2           O2 Concentration, %         (O2)         20.2         20.2         20.2           Ave Sq Rt Velo Head, (in. H2O)^½         ((Delta P)½)avg)         0.993         0.987         0.980           Stack Temperature, °F         (Ts-R)         631.2         632.3         633.1           Moisture Fracti	0.84
Nozzle Diameter, in.  (Dn)  0.250	1.0030
Meter Volume, ft^3         (Vm)         29,740 / 29,705 / 30,008 / 69.8         30,008 / 75.6 / 69.8           Meter Temperature, °F         (Tm)         62.2 / 69.8 / 75.6 / 69.8         75.6 / 69.8           Meter Temperature, °R         (Tm-R)         522.2 / 529.8 / 535.6         535.6           Meter Orifice Pressure, in. H2O         (Delta H)         1.300 / 1.3000 / 1.3000 / 1.300 / 1.300 / 1.300 / 1.300 / 1.300 / 1.300 / 1.300 / 1.300 / 1.300 / 1.300	1.8000
Meter Temperature, °F         (Tm)         62.2         69.8         75.6           Meter Temperature, °R         (Tm-R)         522.2         529.8         535.6           Meter Orifice Pressure, in. H2O         (Delta H)         1.300         1.300         1.300           Ave Sq Rt Orifice Press, (in. H2O)^½         ((Delta H)½)avg)         1.140         1.140         1.140           Volume H2O Collected, mL         (Vlc)         147.7         145.6         139.1           CO2 Concentration, %         (CO2)         0.2         0.2         0.2           O2 Concentration, %         (O2)         20.2         20.2         20.2           Ave Sq Rt Velo Head, (in. H2O)^½         ((Delta P)½)avg)         0.993         0.987         0.980           Stack Temperature, °F         (Ts)         171.2         172.3         173.1           Stack Temperature, °R         (Ts-R)         631.2         632.3         633.1           Moisture Fraction (at Saturation)         (BWS)         0.423         0.434         0.442           CALCULATED DATA           Nozzle Area, ft²         (As)         13.64         13.64         13.64           Stack Pressure, in. Hg         (Ps)         29.63         29.63	0.250
Meter Temperature, °R         (Tm-R)         522.2         529.8         535.6           Meter Orifice Pressure, in. H2O         (Delta H)         1.300         1.300         1.300           Ave Sq Rt Orifice Press, (in. H2O)^½         ((Delta H)½)avg)         1.140         1.140         1.140           Volume H2O Collected, mL         (Vlc)         147.7         145.6         139.1           CO2 Concentration, %         (CO2)         0.2         0.2         0.2           O2 Concentration, %         (O2)         20.2         20.2         20.2           Ave Sq Rt Velo Head, (in. H2O)^½         ((Delta P)½)avg)         0.993         0.987         0.980           Stack Temperature, °F         (Ts)         171.2         172.3         173.1           Stack Temperature, °R         (Ts-R)         631.2         632.3         633.1           Moisture Fraction (at Saturation)         (BWS)         0.423         0.434         0.442           CALCULATED DATA           Nozzle Area, ft²         (As)         13.64         13.64         13.64           Stack Pressure, in. Hg         (Ps)         29.63         29.63         29.63           Meter Pressure, in. Hg         (Pm)         29.78         29.78	29.818 69.2
Meter Orifice Pressure, in. H2O       (Delta H)       1.300	
Ave Sq Rt Orifice Press, (in. H2O)^½ ((Delta H)½)avg) 1.140 / 1.140 / 1.140 / Volume H2O Collected, mL (Vlc) 147.7 / 145.6 / 139.1 / CO2 Concentration, % (CO2) 0.2 / 0.2 / 0.2 / 0.2 / 0.2 / O2 Concentration, % (O2) 20.2 / 20.2 / 20.2 / 20.2 / Ave Sq Rt Velo Head, (in. H2O)^½ ((Delta P)½)avg) 0.993 / 0.987 / 0.980 / Stack Temperature, °F (Ts) 171.2 / 172.3 / 173.1 / Stack Temperature, °R (Ts-R) 631.2 632.3 633.1 / Moisture Fraction (at Saturation) (BWS) 0.423 / 0.434 / 0.442 / CALCULATED DATA  Nozzle Area, ft² (An) 3.41E-04 3.41E-04 3.41E-04 3 / Stack Area, ft² (As) 13.64 / 13.64 / 13.64 / 13.64 / Stack Pressure, in. Hg (Ps) 29.63 / 29.63 / 29.63 / 29.63 / 29.63 / Meter Pressure, in. Hg (Pm) 29.78 / 29.78 / 29.78 / 29.78 / Standard Meter Volume, ft³ (Vmstd) 30.003 / 29.538 / 29.516 / Standard Water Volume, ft³ (Vwstd) 6.952 / 6.853 / 6.547 / Moisture Fraction (Measured) (BWS) 0.188 / 0.188 / 0.182	529.2
Volume H2O Collected, mL       (VIc)       147.7 / 145.6 / 139.1 / 145.6 / 139.1 / 145.6 / 139.1 / 145.6 / 139.1 / 145.6 / 139.1 / 145.6 / 139.1 / 145.6 / 139.1 / 145.6 / 139.1 / 145.6 / 139.1 / 145.6 / 139.1 / 145.6 / 139.1 / 145.6 / 139.1 / 145.6 / 139.1 / 145.6 / 139.1 / 145.6 / 139.1 / 145.6 / 139.1 / 145.6 / 139.1 / 145.6 / 139.1 / 145.6 / 139.1 / 145.6 / 149.1 / 145.6 / 139.1 / 145.6 / 139.1 / 145.6 / 149.1 / 145.6 / 149.1 / 145.6 / 149.1 / 145.6 / 149.1 / 145.6 / 149.1 / 145.6 / 149.1 / 145.6 / 149.1 / 145.6 / 149.1 / 145.6 / 149.1 / 145.6 / 149.1 / 145.6 / 149.1 / 145.6 / 149.1 / 145.6 / 149.1 / 145.6 / 149.1 / 145.6 / 149.1 / 145.6 / 149.1 / 1	1.300
CO2 Concentration, % (CO2) 0.2 / 0.2 / 0.2 / 0.2 / O2 Concentration, % (O2) 20.2 / 20.2 / 20.2 / 20.2 / Ave Sq Rt Velo Head, (in. H2O)^1/2 ((Delta P)//2)avg) 0.993 / 0.987 0.980 / O.980 / O.	1.140
O2 Concentration, %       (O2)       20.2       20.2       20.2         Ave Sq Rt Velo Head, (in. H2O)^½       ((Delta P)½)avg)       0.993       0.987       0.980         Stack Temperature, °F       (Ts)       171.2       172.3       173.1         Stack Temperature, °R       (Ts-R)       631.2       632.3       633.1         Moisture Fraction (at Saturation)       (BWS)       0.423       0.434       0.442         CALCULATED DATA         Nozzle Area, ft²       (An)       3.41E-04       3.41E-04       3.41E-04       3         Stack Area, ft²       (As)       13.64<	144.1
Ave Sq Rt Velo Head, (in. H2O)^1/2       ((Delta P)1/2)avg)       0.993	0.2
Stack Temperature, °F       (Ts)       171.2 (Ts-R)       172.3 (Ts-R)       173.1 (Ts-R)         Stack Temperature, °R       (Ts-R)       631.2 (632.3 (633.1 (15.4	20.2
Stack Temperature, °R         (Ts-R)         631.2         632.3         633.1           Moisture Fraction (at Saturation)         (BWS)         0.423         0.434         0.442           CALCULATED DATA           Nozzle Area, ft²         (An)         3.41E-04         3.41E-04         3.41E-04         3           Stack Area, ft²         (As)         13.64	0.987
Moisture Fraction (at Saturation)         (BWS)         0.423 ✓         0.434 ✓         0.442 ✓           CALCULATED DATA           Nozzle Area, ft²         (An)         3.41E-04         3.41E-04         3.41E-04         3           Stack Area, ft²         (As)         13.64 ✓         13.64 ✓         13.64 ✓         13.64 ✓           Stack Pressure, in. Hg         (Ps)         29.63 ✓         29.63         29.63           Meter Pressure, in. Hg         (Pm)         29.78 ✓         29.78         29.78           Standard Meter Volume, ft³         (Vmstd)         30.003 ✓         29.538         29.516           Standard Water Volume, ft³         (Vwstd)         6.952 ✓         6.853         6.547           Moisture Fraction (Measured)         (BWS)         0.188         0.182	172.2
CALCULATED DATA         Nozzle Area, ft²       (An)       3.41E-04       3.41E-04       3.41E-04       3         Stack Area, ft²       (As)       13.64 ✓       13.64 ✓       13.64 ✓         Stack Pressure, in. Hg       (Ps)       29.63 ✓       29.63       29.63         Meter Pressure, in. Hg       (Pm)       29.78 ✓       29.78       29.78         Standard Meter Volume, ft³       (Vmstd)       30.003 ✓       29.538       29.516         Standard Water Volume, ft³       (Vwstd)       6.952 ✓       6.853       6.547         Moisture Fraction (Measured)       (BWS)       0.188 ✓       0.188       0.182	632.2
Nozzle Area, ft²       (An)       3.41E-04       3.41E-04       3.41E-04       3.41E-04       3         Stack Area, ft²       (As)       13.64 ✓<	0.433
Stack Area, ft²       (As)       13.64 ✓       13.64 ✓       13.64 ✓         Stack Pressure, in. Hg       (Ps)       29.63 ✓       29.63       29.63         Meter Pressure, in. Hg       (Pm)       29.78 ✓       29.78       29.78         Standard Meter Volume, ft³       (Vmstd)       30.003 ✓       29.538       29.516         Standard Water Volume, ft³       (Vwstd)       6.952 ✓       6.853       6.547         Moisture Fraction (Measured)       (BWS)       0.188 ✓       0.188       0.182	
Stack Pressure, in. Hg       (Ps)       29.63 ✓       29.63       29.63         Meter Pressure, in. Hg       (Pm)       29.78 ✓       29.78       29.78         Standard Meter Volume, ft³       (Vmstd)       30.003 ✓       29.538       29.516         Standard Water Volume, ft³       (Vwstd)       6.952 ✓       6.853       6.547         Moisture Fraction (Measured)       (BWS)       0.188 ✓       0.188       0.182	.41E-04
Meter Pressure, in. Hg       (Pm) $29.78$ $29.78$ $29.78$ Standard Meter Volume, $t^3$ (Vmstd) $30.003$ $29.538$ $29.516$ Standard Water Volume, $t^3$ (Vwstd) $6.952$ $6.853$ $6.547$ Moisture Fraction (Measured)       (BWS) $0.188$ $0.182$	13.64
Standard Meter Volume, $\mathrm{ft}^3$ (Vmstd) $30.003 \checkmark 29.538$ 29.516 Standard Water Volume, $\mathrm{ft}^3$ (Vwstd) $6.952 \checkmark 6.853$ $6.547$ Moisture Fraction (Measured) (BWS) $0.188 \checkmark 0.188$	29.63
Standard Water Volume, $ft^3$ (Vwstd) 6.952 $\checkmark$ 6.853 6.547 Moisture Fraction (Measured) (BWS) 0.188 $\checkmark$ 0.188 0.182	29.78
Moisture Fraction (Measured) (BWS) 0.188 v 0.188 0.182	29.686
	6.784
Moisture Fraction (lower sat/meas) (BWS) 0.188 0.182	0.186
	0.186
Mol. Wt. of Dry Gas, lb/lb-mole (Md) 28.84 28.84 28.84	28.84
Mol. Wt. of Stack Gas, lb/lb-mole (Ms) 26.80 √ 26.80 26.87	26.82
Average Stack Gas Velocity, ft/sec (Vs) 63.60 \( \sqrt{63.25} \) 62.73	63.19
Stack Gas Flow, actual, ft³/min (Qa) 52031 √ 51745 51320	51699
Stack Gas Flow, Std , ft <sup>3</sup> /min (Qs) 34982 34718 34676	34792
Calibration check (Yqa) 1.0288 1.0375 1.0326	1.033
Percent difference from Y	2.99%

	<u>II</u> S													Pulp Drye #2-	15730.0 er, #3 Paper M 3 SDTVs & #1 Emission	.001.008 Iachine, 1-2 CBs
ks ks 6 0.001	COMMENTS												V <sub>m-std</sub> ,	Os, dscfm % Isokinetic	Calculated by QC by	
Factor W/A Leak Checks Leak Checks  Leak Checks  The C	SAMPLE TRAIN VACUUM (in Hg)	wu	n	n	~	NM	2	nes	a	wa	m	3	Max Vac		Calcul	
K Fa	IMPINGER EXIT TEMP (°F)	25	52	200	24	504	55	54	55	300		57	Max Temp	Thermocouple Check Meter Temp., °F	Ref. Temp, "F Result	
Filter II	FILTER EXIT TEMP (°F)	<b>A</b>										>	Min/Max	Therr	Xer	
16 16 16 16 16 16 16 16 16 16 16 16 16 1	FILTER BOX TEMP (°F)	241	253	250	152	256	452	256	252	256	258	452	Min/Max 741/758	rrite M3A		
ture vient Temp. 63 Pressure* 35.66 ic Pressure 66 pringer Gain 77 a Gel Gain 77 Stack Area 66.64	PROBE TEMP (°F)	24.2	262	242		241	3	243	241	243	242	145	Min/Max	O <sub>2</sub> /CO <sub>2</sub> by Orsat Fyrite M3A Leak Check, Pre-run	Post-run	
Method: EPA 4, Moisture  Ambient Temp.  Ambient Temp.  Ambient Temp.  Baro. Pressure  Static Pressure  Impinger Gain  Stack Area		50	60	0-5	-	600	2.	ene	69	200	99	60	Avg Tm		1.1	
DA 4, N	DGM INLET TEMP (°F)	4 2		+						+	,			100 Z.O. Z	18:87	
423 423 66.6 50.84 472.3 472.3		120	121	172	172	27.		171	171	171	172	176	PI'S T	Flue Gas Composition Oxygen, %	Carbon Dioxide, % Moisture, %	
	≥ 0 10	733.4		737. 1	242.8	744.5	748.3	757.0	753.8	757.5	59.4	61.246	Total Volume	Flue Gas Co	Carbon Diox Moisture, %	
Console ID Meter Corr., Y Console ∆H@ Probe ID/Length Liner Material Pitot ID/Coeff. Thermo ID Nozzle ID/Diams. Avg. Nozzle Diam.	ш	1.513		ww		W W		3 6		in	3	1.3 7	1	70 VAH		
		*				-	٠, د		-		<i>(</i> .	1	1.300 AVG AVG	1.190		
Data New Indy Catawba, SC Mood Exhaust 15730.001.008	VELOCITY PRESSURE  Ap  (in. H <sub>2</sub> O)	1:0	.75	-0-	1.0	-00	76.	96.		66.	46.	.75	449 JA	8886	Comments	
Data New Inc Catawba, No. # Hood E	CLOCK TIME (plant time)											8:44	it port elevation			
Kinetic Fiel Client Coation/Plant Source mple Location W. O. Number Run Number Date est Personnel Sample Time	SAMPLE TIME (min)	e 0	o !	15	18	24	27	33	36	39	45	48	*Barometric Pressure is at port elevation		Integrated Air Services	
Client New Coation/Plant Catava Source No. / Hoo Sample Location	SSE T	A-1	е .	2	1 0	- 80	B-1	3 8	4	တ လ	7	∞ ,	*Baromet	W.E.	Integrate	76

Page 1 of 1	K Factor	IMPINGER SAMPLE TRAIN COMMENTS (in Hg)		48 3		49 3	0				7		53 3	53 3	54 3	54 3	54 3	Max Vac V <sub>m-std</sub> ,	Check Qs, dscfm % Isokinetic	Ref. Temp, "F Calculated by Cara Result QC by Market Result Act of the Result Calculated by Cara Result Calculated by Calculated by Cara Result Calculated by Calcul	60.001.008 Machine #1-2 CBs on Report
	or in. Hg in. Hg in. H2O mL g @ Vi ft² Filter ID 16 Sample ID	FILTER FILTER BOX EXIT TEMP (°F) TEMP (°F)	54 N 4	256	154	158	256	258	.54	255	<i>h</i> 52	56	5	9.	65	53		Min/Max Min/Max S2/264	M3A Th		
	Ambient Temp. 70 Baro. Pressure* 29.68 Static Pressure 68 Impinger Gain 139.6 Silica Gel Gain 6 Stack Area 13.64  Stack Area 13.64  Total Traverse Points	PROBE TEMP (°F)		241 242 2	243 2			244 28	245 2	2 262	7	2 /	243 255	244 256	452 4h2	241 25	64	241/145 253	by leck	Post-run	
4, Moisture	Amb Baro Stati Imp Silic	DGM DGM INLET OUTET TEMP (°F) TEMP (°F)	*	000000000000000000000000000000000000000	69	69	9.	63	70	20	70	7/	7/	1/2	122	100	V 72	69.8	3	12:00	
Method: EPA	10.23 1.800 1.800 1.600 55 75 70.84 70.33 10.84	STACK TEMP (°F)	N 271	173	173	173	-	173	172	172	177	172	173	173	173	169	169	Avg T <sub>s</sub>	Compositio	kide, %	
Met	יושא נגל	DRY GAS METER READING (ft <sup>3</sup> )	763.4	765.2	769.1	770.8			776.3	178.1	780.0	781.8	783.7	785.6	787.5	787.3	791.205	29.705	/ Flue Gas Cc Oxygen, %	Carbon Diox Moisture, %	
	Console ID Meter Corr., Y Console AH@ Probe ID/Length Liner Material Pitot ID/Coeff. Thermo ID Nozzle ID/Diams. Avg. Nozzle Diam.	ORIFICE PRESSURE (In. H.O.)	1.3		1.3	1.3	1.3	1.3	1,3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	11.3	1. 300 AH	L. 1402		
ta	New Indy Catawba, SC 1 Hood Exhaust 2 15730.001.008 2 725/11 4/66 min.	VELOCITY. PRESSURE  Ap  (in. H <sub>2</sub> O)	1.1	1.7	1.1	1.0	66.	76.	46.	.95	46.	76.	.98	0:-	66.	12.	.72	ation Avg VAP		Comments	
Field Data	No. No. 12	CL TI (plan	#132		2	2	80		4		0	m	0	6	2	2	8 09:52	*Barometric Pressure is at port elevation	77		
<b>Isokinetic Field</b>	Client Location/Plant Source Sample Location W. O. Number Run Number Date Test Personnel Sample Time	TRAVERSE SAMPLE TIME POINT (min) NO.		3 2	4 12	5 15		7 21	8 24	B-1 27	2 30	3 33	4 36	5 39	6 42	7 45	8 48	*Barometric Pres	W.S.	Integrated Air Services	77

	90.0		1,0	Final	000.0	300	Grood		
Page 1 of 1	,	*	eak Checks	Initial	00000	12"	bood	+	
Page	1/ 1-21	N ractor	Leal		ume, ft <sup>3</sup>	, in. Hg		NI	Run 3
					Volume	@ Vac.	Pitot	J.	Sample ID
		g	. H <sub>2</sub> O					Filter	Sam
	'n.	Baro. Pressure* 29.68 in. Hg	in. H	7 ml	5		od ft2		16
	p. 74	e* 29.c	re 69	in/36.	in 2.4		Stack Area 12.64 ft <sup>2</sup>		Points
nre	Ambient Temp.	Pressur	Static Pressure	mpinger Gain/36.	Silica Gel Gain 2.4		stack Are		Total Traverse Points
, Moist	Ambi	Baro.	Static	Imp	Silice		0)		Total
EPA 4						0.84			in.
Method: EPA 4, Moisture	220	.603	800	19-20	5	7	23		052
Me	D A	1 ×	3	th PRC	al S	f. P7	D 10	S.	٦.
	Console I	Meter Corr., \	Console ∆H@	Probe ID/Length	Liner Material	Pitot ID/Coeff.	Thermo ID	Nozzle ID/Diams.	zle Dian
	0	Mete	Cons	Probe	Line	Pitot		Nozzle	Avg. Nozzle Diam.
		O	aust		90			H LANGE H	
ta	New Indy	Catawba, SC	lood Ext		15730.001.008	က	12/5	138	min.
ld Da	Z	Cat	No. 1 Hood Exhaust	Roct	1573		6/25/21	132A/BE	36
ic Fie	Client	/Plant	Source	cation	umber	ımber	Date	onnel	Sample Time 48
<b>Isokinetic Field Data</b>		Location/Plant	S	Sample Location 1200-	W. O. Number	Run Number		Test Personnel	Sample
Iso				Sa					

	COMMENTS																			Pul
	COM																	\	V <sub>m-std</sub> ,	Qs, dscfm
TOTAL STREET,	SAMPLETRAIN	(in Hg)	7	8	7	8	7	7	8	70	3	2	8	8	8	8	7	7	Max Vac	
THE RESIDENCE AND ADDRESS OF THE PERSON NAMED AND ADDRESS OF T	IMPINGER	TEMP (°F)	12658	59	57	56	54	24	24	55	58	57	56	56	57	58	58	00	Max Temp	Thermocouple Check
STATE OF THE PARTY	FILTER	TEMP (~F)	N/A															10	Mn/Max	The
The state of the s	FILTER BOX		126	250	255	255	254	253	256	255	250	253	252	254	255	253	255	150	150/hsk	yrite M3A
THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TRA	PROBE (°F)		244	143	142	662	242	240	242	240	249	243	244	145	240	145	240	243	140/214	by Orsat Fyrite M3A
A BANK A SAN SAN SAN SAN SAN SAN SAN SAN SAN S	DGM OUTET	TEMP('F)	73	74	74	74	75	75	75	76	76	76	26	77	77	77	77	78/	Avg T <sub>m</sub> 7S.6	O <sub>2</sub> /CO <sub>2</sub>
denne actions and appropriate to	DGM INLET	TEMP (*F)	NIA	1	/													Z		5
O SOCIOLOGICALICATION OF STREET, STREE	STACK	(H)	172	172	173	173	173	174	174	173	121	173	124	174	174	174	173	173/	Norts /	composition
SCHOOL SECTION STATE OF THE PERSON SECTION SEC	DRY GAS METER- READING (ft <sup>3</sup> )	791.500	793,4	715.2	1240,556	799.0	800.9	802.8	804.7	3.908	808.5	810.4	812.2	814.1	816.0	817.8	617.6	821.508	30.008 173, /	VFlue Gas C
	ORIFICE PRESSURE	(in. H <sub>2</sub> O)	1.3	1.3	1.3	1.3	1,3			1.3	1.3	1.3		1.3	1.3	1.3	(.3	1.3	1, 300 VH	AND VAH
and the same of th	VELOCITY PRESSURE	(in. H <sub>2</sub> O)	.92	16.	96.	.98	0.7	66.	.98	.92	600	1.1	1.1	1.1	.93	46.	.00	.86	9796p.	9/13
Constitution of the last of th	CLOCK TIME (plant time)	10:05																10:54	*Barometric Pressure is at port elevation	
THE REAL PROPERTY AND PERSONS ASSESSMENT OF THE PERSONS ASSESSMENT OF	SAMPLE TIME (min)	0	3	9	6	12	15	18	21	24	27	30	33	36	39	42	. 45	48	tric Pressure is	With This
The state of the s	TRAVERSE	ON.	A-1	2	ဗ	4	C	9	7	∞	B-1	2	е	4	2	9	7	80	*Barome	W/d

Comments Comments Integrated Air Services

1.140g VAH

,9613

Oxygen, % Carbon Dioxide, % Moisture, %

O<sub>2</sub>/CO<sub>2</sub> by Orsat Fyrite M3A Leak Check, Pre-run Post-run

Meter Temp., °F Ref. Temp, °F Result

Data Sheets Version 2. Copyright © 7021 by Weston Solutions, Inc.

## **Sample Recovery Field Data**

Method: EPA 4, Moisture

Location	/Plant	Catawba, SC		,	Source N.O. Number		30.001.008	
			ngers 1 - 3 measur				70.001.000	
Fig. 197		Tillpi	- O measur	chients in grains				
Run No.	1		Sample Date	6/25/21	Reco	overy Date	6/25/2	21
Sample ID			Filter ID	NA		Analyst	BEA/	BE
N.		100000000000000000000000000000000000000	Im	npingers		A STREET HE		
Contents	1	2	3			Imp.Total	Silica Gel	Total
Final	869.6	896.1	tel 1				grams	
Initial	747.5	328.6	651.1				881.7	
Gain			645.0			180 7	874.7	11/
	117.1	17.5	6.1			140.7	1/	147.7
Im	pinger Color	bch_			Labled?	1		
Silica G	el Condition	rood			Seale 1?			
							1 6 6	
Run No.	2		Sample Date	6/25/21	Reco	overy Date	6/23/2	4
Sample ID			Filter ID	NA		Analyst	BEAL	35
				npingers				
Contents	1	2	3			Imp.Total	Silica Gel	Total
	GGI /	211 0	FFIF				grams	
Initial	881.6	711.8	551.5				911.0	
	759.5	696.2	549.6			100 1	905.0	111001
Gain	122.1	15.6	1.9			139.6	6	145.67
	oinger Color Cle	The state of the s			Labled?	/		
Silica G	el Condition G	ecl			SealeJ?			
Run No.	3		Sample Date	6/25/21	Reco	overy Date	6/25/	2/
Sample ID			Filter ID	NA		Analyst	BEA/	BE
			lm	pingers				
Contents	1	2	3			Imp.Total	Silica Gel	Total
Final	679 //	877 1	1290				grams	
Initial	879.4	823.0	652.9				852.1	
	764.4	803.9	650.3				844.7	
Gain	115	19.1	2.6/			136.7	2.4	139.1
lmi	oinger Color	legel			Labled?	//		
Silica G	el Condition	od			Sealed?			
		Ch	eck COC for Sample ID	s of Media Blanks				





## Sample and Velocity Traverse Point Data Sheet - Method Poly Spark Mackine, #3 Paper Mackine, #3 SDTVs, & #1-2 CBs Emission Report

Client		New Indy	_	Operator	VD / LF
Loaction/Plant		Catawba, SC		Date	15-Jun-21
Source		No. 1 Hood Exhaust	_	W.0. Number	15730.001.008
Duct Type	<b>V</b>	Circular		Rectangular Duct	Indicate appropriate type
Traverse Type		Particulate Traverse	1	Velocity Traverse	

Port Depth (in.) = D  Depth of Duct, diameter (in.) = C-D  Area of Duct (ft²)  Total Traverse Points	50.125
Area of Duct (ft <sup>2</sup> )	0.125
	50
Total Traverse Points	13.64
	16
Total Traverse Points per Port	8

Rectangular Ducts Only	
Width of Duct, rectangular duct only (in.)	
Total Ports (rectangular duct only)	

	Trav	verse Point Loc	ations
Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	3.2	1 1/2	1 1/2
2	10.5	5 1/2	5 1/2
3	19.4	9 1/2	10
4	32.3	16	16 1/2
5	67.7	34	34
6	80.6	40 1/2	40 1/2
7	89.5	45	45
8	96.8	48 1/2	48 1/2
9			
10			
11			
12			

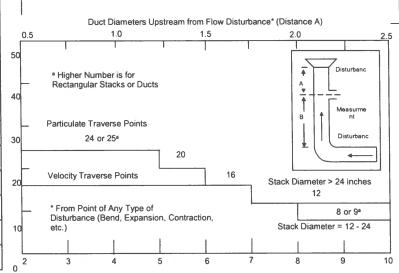
Equivalent Diameter = (2\*L\*W)/(L+W)

- [			Trave	rse Poi	nt Loc	cation P	ercer	t of Sta	ck -C	ircular		
					Numb	er of Tra	verse	Points				
ĺ	1	2	3	4	5	6	7	8	9	10	-11	12
1		14.6		6.7		4.4		3.2		2.6		2.1
2		85.4		25	1	14.6	317	10.5		8.2		6.7
3				75		29.6		19.4		14.6		11.8
4	表級	1000		93.3		70.4	(Spiral	32.3	300	22.6	WAS I	17.7
5						85.4		67.7		34.2		25
6		AND THE		1000	SWY	95.6		80.6	727	65.8	T 200	35.6
7								89.5		77.4		64.4
8		J. Back	( BEN	1	132		1,22	96.8	The same	85.4	407	75
9										91.8		82.3
10	1116		- 12				Ab	200	MA	97.4		88.2
11												93.3
12	17.50		13/3		7	144		100	100	213		97.9

Port Diam. (in) =	4
Number of Ports =	2

Flow Disturbances	
Upstream - A (ft)	4.417
Downstream - B (ft)	25.0
Upstream - A (duct diameters)	1.06
Downstream - B (duct diameters)	6.00

Diagram of Stack

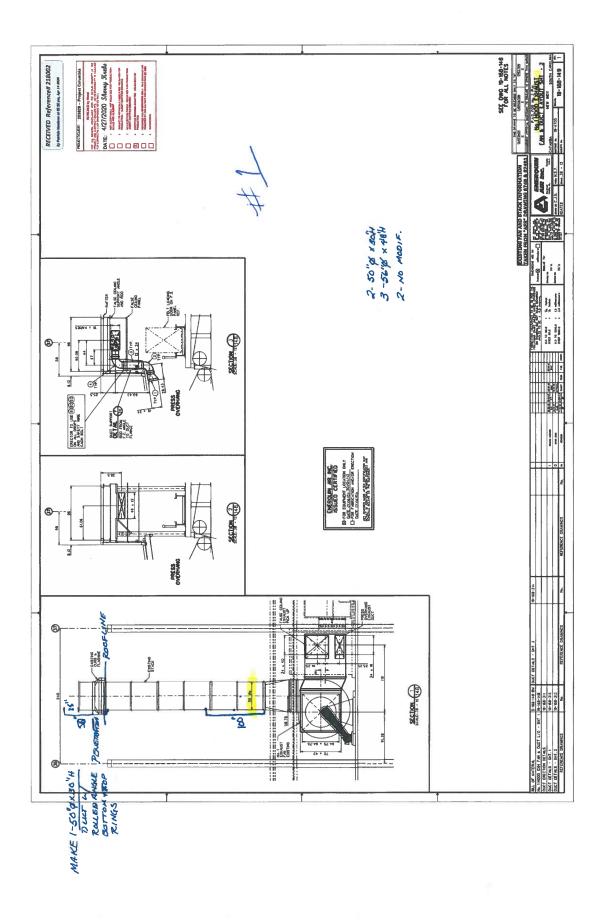


Duct Diameters Downstream from Flow Disturbance\* (Distance B)

	- [		Tr	averse	Point	Locati	on Pe	cent o	f Stac	k -Rect	angula	ar	
						Numbe	er of Tra	verse	Points				
		- 1	2	3	4	5	6	7	8	9	10	11	12
	1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
Ī	2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
	3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
나	4			1	87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
° l	5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
ă	6		1000	0.35	Sizal.	TOE S	91.7	78.6	68.8	61.1	55.0	50.0	45.8
t	7							92.9	81.3	72.2	65.0	59.1	54.2
1	8		eng	100	300		10/62	0.188	93.8	83.3	75.0	68.2	62.5
0	9									94.4	85.0	77.3	70.8
"	10	aw.	2 70	7/11	12.00	100		148	100	THE.	95.0	86.4	79.2
	11											95.5	87.5
	12		1 100	7 1	24	46	45.77		34		Balle I	1	95.8

Rectangular
Stack Points
& Matrix
9 - 3 x 3
12 - 4 x 3
16 - 4 x 4
20 - 5 x 4
25 - 5 x 5
30 - 6 x 5
36 - 6 x 6
42 - 7 x 6
49 - 7 x 7

Tape Measure I.D. #



### **RUN SUMMARY**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 1

Method 16

Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 25 Jun 2021

Start Time 07:55

**End Time** 08:55

**Average Measured TRS Conc.** Recovery No. 2

**TRS Corrected for Recovery** 

0.42 ppm 97.6 %

0.43 ppm

### **RUN SUMMARY**

Number 2

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 1

Method 16

Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 25 Jun 2021

Start Time 09:00

**End Time** 10:00

**Average Measured TRS Conc.** 

Recovery No. 2

**TRS Corrected for Recovery** 

0.47 ppm

97.6 % 0.48 ppm

0.64

013c

PB 1

## **RUN SUMMARY**

Number 3

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 1

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 25 Jun 2021

Start Time 10:05

**End Time** 11:05

Average Measured TRS Conc. Recovery No. 2 TRS Corrected for Recovery 0.56 ppm 97.6 % 0.57 ppm

9129

PB /

Number 1

			TRS	maa	0.27	0.27	0.72	0.37	0.47	0.38	0.87	0.54	0.44	0.68	0.80	69.0	0.71	0.73	0.47	0.98	0.57	0.27	0.61	09.0	0.57
.008		21		٧	0.024	0.024	0.024	0.024	0.024	0.024	0.024		0.024	0.024			0.024		0.024		0.024	0.024	0.024		
15730.001.008	VD	25 Jun 2021	DMDS	mdd								0.11			0.13	0.12		0.10		0.16				0.09	
		Date:		area	<2>	<b>~</b>	<b>%</b>	<b>%</b>	<b>%</b>	?	<b>%</b>	33	<b>~</b>	?	49	42	<b>~</b>	27	<b>%</b>	71	<b>~</b>	<b>%</b>	<b>%</b>	25	
Project Number:	0			v	0.07	0.07			0.07	0.07		0.07		0.02	0.07	0.07	0.07	0.07			0.07	0.07		0.07	
			DMS	ppm			0.28	0.17			0.32		0.15						0.27	0.34			0.41		
	9	1		area	<2	7	27	10	<b>~</b>	7	33	<b>~</b>	∞	<b>4</b>	<2	<b>~</b>	<b>%</b>	<2	25	37	<b>~</b>	<b>~</b>	54	<2	
	Method: 16	Calibration: 1		v	0.082	0.082		0.082		0.082		0.082	0.082			0.082			0.082	0.082		0.082	0.082	0.082	
	~	Ö	MeSH	mdd			0.15		0.28		0.24			0.30	0.23		0.38	0.20			0.21				
				area	¢2	<b>%</b>	9	<b>~</b>	20	<b>%</b>	16	7	<b>%</b>	24	14	<b>~</b>	37	7	<b>~</b>	<b>~</b>	12	<b>~</b>	<b>~</b>	<b>~</b>	
					0.07	0.07	0.24	0.07	0.07	0.18	0.27	0.17	0.16	0.26	0.24	0.29	0.22	0.26	0.07	0.23	0.25	0.07	0.07	0.26	0.18
		ent 1	H <sub>2</sub> S	V	0.071	0.071		0.071	0.071										0.071			0.071	0.071		
λk	a, SC	Paper Machine Vent 1	I.	mdd			0.24			0.18	0.27	0.17	0.16	0.26	0.24	0.29	0.22	0.26		0.23	0.25			0.26	
New Indy	Catawba, SC	Paper N		area	<2	%	19	7	7	12	24	10	9	23	20	29	17	23	<b>~</b>	19	21	<b>~</b>	<b>~</b>	24	
Client:	Location:	Source:		Time	07:55	07:58	08:01	08:04	08:07	08:10	08:13	08:16	08:19	08:22	08:25	08:28	08:31	08:34	08:37	08:40	08:43	08:46	08:49	08:52	Averages

c	V
100	1
1	
ż	2

			TRS	mdd	0.43	0.27	0.81	0.54	0.27	0.47	0.69	1.15	0.43	0.77	0.62	0.41	0.46	0.43	0.51	0.64	0.91	0.59	0.53	1.41	0.62
1.008		121		٧	0.024	0.024	0.024	0.024	0.024	0.024			0.024	0.024	0.024	0.024		0.024		0.024		0.024	0.024		:
15730.001.008	ΛD	25 Jun 2021	DMDS	mdd							0.10	0.07					0.12		0.14		0.13			0.10	
Project Number:	Operator:	Date:		area	\$	<b>%</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>%</b>	56	13	<b>~</b>	<b>~</b>	7	7	40	<b>~</b>	24	7	46	<b>~</b>	<b>~</b>	30	
Project N	0			V		0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07		0.07		0.07	0.07	0.07			0.07	0.07		
			DMS	mdd	0.18									0.16		0.17				0.22	0.35			0.44	
	9	1		area	12	7	<b>~</b>	<b>%</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	တ	<b>~</b>	10	<2	<2	<2	17	39	<b>~</b>	<b>~</b>	62	
	Method: 16	Calibration:		v	0.082	0.082		0.082	0.082		0.082		0.082			0.082	0.082	0.082	0.082	0.082	0.082				
	2	Ö	MeSH	mdd			0.51			0.18		0.50		0.35	0.24							0.34	0.15	0.51	
				area	<2	<b>%</b>	65	<b>~</b>	<b>~</b>	တ	7	63	<b>%</b>	32	16	<b>~</b>	<2	<2	<b>~</b>	<2	<2	30	7	65	
					0.12	0.07	0.18	0.34	0.07	0.17	0.35	0.45	0.23	0.21	0.26	0.11	0.07	0.23	0.07	0.29	0.22	0.14	0.26	0.25	0.21
		ent 1	H <sub>2</sub> S	<b>v</b>		0.071			0.071								0.071		0.071						
λ	a, SC	Paper Machine Vent 1	I	ppm	0.12		0.18	0.34		0.17	0.35	0.45	0.23	0.21	0.26	0.11		0.23		0.29	0.22	0.14	0.26	0.25	
New Indy	Catawba, SC	Paper N		area	2	<b>~</b>	12	39	<b>~</b>	<del>-</del>	41	29	19	16	23	2	7	9	<b>~</b>	59	17	7	24	22	
Client:	Location:	Source:		Time	00:60	60:60	90:60	60:60	09:12	09:15	09:18	09:21	09:24	09:27	08:30	09:33	09:36	09:39	09:42	09:45	09:48	09:51	09:54	09:57	Averages

Number 3

Catawba, SC Paper Machine Vent 1
H <sub>2</sub> S
ppm < area
6 0.16 <2
0.15
0.35 0.35 <2
0.26 0.26 22
0.45 0.45 <2
0.13 0.13 16
5 0.25 23
0.37
0.20
0.071 0.07
0.22
0.16
0.071 0.07
0.21
0.19
0.071 0.07 9
0.43 0.43 <2
0.21

Number 1

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 1 Method 16 Calibration 1 Project Number: 15730.001.008
Operator: VD

Time	Н	<sub>2</sub> S	Me	SH	D	MS	DN	IDS	TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
07:55	<2	<0.07	<2	<0.08	<2	<0.07	<2	<0.02	-
07:58	<2	< 0.07	<2	<0.08	<2	< 0.07	<2	< 0.02	_
08:01	19	0.24	6	0.15	27	0.28	<2	< 0.02	0.67
08:04	<2	< 0.07	<2	<0.08	10	0.17	<2	< 0.02	0.17
08:07	<2	< 0.07	20	0.28	<2	< 0.07	<2	< 0.02	0.28
08:10	12	0.18	<2	<0.08	<2	< 0.07	<2	< 0.02	0.18
08:13	24	0.27	16	0.24	33	0.32	<2	< 0.02	0.82
08:16	10	0.17	<2	<0.08	<2	< 0.07	33	0.11	0.39
08:19	10	0.16	<2	<0.08	8	0.15	<2	< 0.02	0.31
08:22	23	0.26	24	0.30	<2	< 0.07	<2	< 0.02	0.56
08:25	20	0.24	14	0.23	<2	< 0.07	49	0.13	0.73
08:28	29	0.29	<2	<0.08	<2	< 0.07	42	0.12	0.54
08:31	17	0.22	37	0.38	<2	< 0.07	<2	< 0.02	0.59
08:34	23	0.26	11	0.20	<2	< 0.07	27	0.10	0.66
08:37	<2	< 0.07	<2	<0.08	25	0.27	<2	< 0.02	0.27
08:40	19	0.23	<2	<0.08	37	0.34	71	0.16	0.90
08:43	21	0.25	12	0.21	<2	< 0.07	<2	< 0.02	0.45
08:46	<2	< 0.07	<2	<0.08	<2	<0.07	<2	< 0.02	
08:49	<2	< 0.07	<2	<0.08	54	0.41	<2	< 0.02	0.41
08:52	24	0.26	<2	<0.08	<2	<0.07	25	0.09	0.45
Average		0.15		0.10		0.10		0.04	0.42

Number 2

Client: New Indy Location: Catawba, SC

Source: Paper Machine Vent 1

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

				Galibra				Dutc. Z	o dan zoz i
Time	Н	l <sub>2</sub> S	Me	SH	D	MS	DN	1DS	TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
09:00	5	0.12	<2	<0.08	12	0.18	<2	<0.02	0.30
09:03	<2	< 0.07	<2	<0.08	<2	< 0.07	<2	< 0.02	_
09:06	12	0.18	65	0.51	<2	< 0.07	<2	< 0.02	0.69
09:09	39	0.34	<2	<0.08	<2	< 0.07	<2	< 0.02	0.34
09:12	<2	< 0.07	<2	< 0.08	<2	< 0.07	<2	< 0.02	177.
09:15	11	0.17	9	0.18	<2	< 0.07	<2	< 0.02	0.36
09:18	41	0.35	<2	<0.08	<2	< 0.07	26	0.10	0.54
09:21	67	0.45	63	0.50	<2	< 0.07	13	0.07	1.08
09:24	19	0.23	<2	<0.08	<2	< 0.07	<2	< 0.02	0.23
09:27	16	0.21	32	0.35	9	0.16	<2	< 0.02	0.72
09:30	23	0.26	16	0.24	<2	< 0.07	<2	< 0.02	0.50
09:33	5	0.11	<2	<0.08	10	0.17	<2	< 0.02	0.28
09:36	<2	<0.07	<2	<0.08	<2	< 0.07	40	0.12	0.24
09:39	18	0.23	<2	<0.08	<2	< 0.07	<2	< 0.02	0.23
09:42	<2	< 0.07	<2	<0.08	<2	< 0.07	54	0.14	0.28
09:45	29	0.29	<2	<0.08	17	0.22	<2	< 0.02	0.51
09:48	17	0.22	<2	<0.08	39	0.35	46	0.13	0.83
09:51	7	0.14	30	0.34	<2	< 0.07	<2	< 0.02	0.48
09:54	24	0.26	7	0.15	<2	< 0.07	<2	< 0.02	0.42
09:57	22	0.25	65	0.51	62	0.44	30	0.10	1.41
Average		0.19		0.14		0.08		0.03	0.47

Number 3

Client: New Indy Location: Catawba, SC

Source: Paper Machine Vent 1

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

Time	H area	l <sub>2</sub> S ppm	Me area	SH ppm	D area	MS ppm	DN area	IDS ppm	TRS ppm
10:05	9	0.16	<2	<0.08	<2	<0.07	-2		0.16
10:03	8	0.15	<2	<0.08	27		<2	<0.02	
10:08		0.15				0.28	<2	< 0.02	0.43
	40		<2	<0.08	<2	<0.07	<2	< 0.02	0.35
10:14	29	0.29	11	0.20	18	0.23	<2	<0.02	0.72
10:17	23	0.26	22	0.29	<2	<0.07	9	0.05	0.65
10:20	66	0.45	<2	< 0.08	<2	< 0.07	6	0.05	0.54
10:23	6	0.13	16	0.25	44	0.37	<2	<0.02	0.75
10:26	22	0.25	23	0.29	14	0.20	16	0.07	0.89
10:29	12	0.18	22	0.29	<2	< 0.07	<2	< 0.02	0.47
10:32	46	0.37	<2	<0.08	<2	<0.07	18	0.08	0.53
10:35	14	0.20	32	0.35	24	0.27	<2	< 0.02	0.82
10:38	<2	< 0.07	<2	<0.08	<2	< 0.07	13	0.07	0.13
10:41	17	0.22	<2	< 0.08	38	0.34	<2	< 0.02	0.56
10:44	10	0.16	<2	< 0.08	6	0.13	20	0.08	0.46
10:47	<2	< 0.07	32	0.35	12	0.19	<2	< 0.02	0.54
10:50	16	0.21	25	0.31	11	0.17	18	0.08	0.85
10:53	<2	< 0.07	23	0.30	44	0.37	<2	< 0.02	0.67
10:56	13	0.19	15	0.24	<2	< 0.07	<2	<0.02	0.43
10:59	<2	< 0.07	9	0.18	25	0.27	<2	<0.02	0.46
11:02	61	0.43	<2	<0.08	28	0.29	<2	<0.02	0.72
Average		0.20		0.15		0.16		0.02	0.56

Number 14

Client: New Indy Location: Catawba, SC

Source: Paper Machine Vent 1

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

Time	Ha	S	Me	SH	DMS		DN	7.84 7.94 7.77	
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
			Ca	libration	drift che	ck			
20:16	14345	7.84	<2	<0.08	<2	< 0.07	<2	< 0.02	7.84
20:19	14713	7.94	<2	<0.08	<2	< 0.07	<2	< 0.02	7.94
20:22	14122	7.77	<2	<0.08	<2	<0.07	<2	<0.02	7.77
Average	- Contraction	7.85		<0.08		<0.07		<0.02	7.85

## **RECOVERY DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 1

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

Date: 25 Jun 2021

Before Run 1

Start Time 07:25

**End Time** 07:33

Recovery Gas to Probe, Time 07:25

Peak Areas, mv-sec

14784

14214

14219

Average

ppm

14406

7.85

Recovery Gas to GC, Time 07:29

Peak Areas, mv-sec

14953

14792

14800

Average

ppm

14848

7.98

Recovery 98.4%



#### **RECOVERY DATA**

Number 2

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 1

Method 16

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

After Run 3 Before Run 4

Start Time 11:06

**End Time 11:15** 

Recovery Gas to Probe, Time 11:06

Peak Areas, mv-sec

13991 13801

13923

Average

ppm 7.71 13905

Recovery Gas to GC, Time 11:12

Peak Areas, mv-sec

14345

14801

14524

**Average** 

ppm

14556 7.90

Recovery 97.6%





## **CALIBRATION DATA**

Number 1

Project Number: 15730.001.008
Operator: VD

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 1

Method 16

Ambie	ent Temperature: 72°C	Barometric I	Pressure: 29.70 in. H	lg
Analyte	H₂S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	460	457	298	232
Ret. Time, sec	25.0	35.0	63.0	132.0
1 Flow = 42.9 mL/Min	<b>10.7</b> ppm	<b>10.7</b> ppm	<b>6.95</b> ppm	<b>5.41</b> ppm
Time: 06:02			as, mv-sec	
	25099	20594	10407	44232
	24750	21533	10445	46016
	25597	21979	10703	45950
Average Area	25149	21369	10519	45399
2 Flow = 82.8 mL/Min	<b>5.56</b> ppm	<b>5.52</b> ppm	<b>3.60</b> ppm	<b>2.80</b> ppm
Time: 06:53		Peak Area	as, mv-sec	
	7926	6406	2923	14068
*	7950	6306	2884	13591
	8444	6460	2990	14698
Average Area	8107	6390	2932	14119
3 Flow = 130 mL/Min	<b>3.54</b> ppm	<b>3.52</b> ppm	<b>2.29</b> ppm	<b>1.79</b> ppm
Time: 07:08		Peak Area	as, mv-sec	
	3069	2599	1371	5786
	3064	2578	1331	5729
	3088	2512	1340	5842
Average Area	3074	2563	1347	5786
7110143071104	0011	2000	1041	01





## **CALIBRATION SUMMARY**

Number 1

Client: New Indy
Location: Catawba, SC

Source: Paper Machine Vent 1

Method 16

Project Number: 15730.001.008 Operator: VD

						,
H₂S	1	2	3.			
Time	06:02	06:53	07:08			
Concentration, ppm	10.7	5.56	3.54			
Area, mv-sec	25149	8107	3074			
Calc. Conc., ppm	10.6	5.79	3.46			
% Error	-1.6	4.2	-2.4			
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8847	2.4717	0.9980	2	0.07	
MeSH	1	2	3			
Time	06:02	06:53	07:08			
Concentration, ppm	10.7	5.52	3.52			
Area, mv-sec	21369	6390	2563			
Calc. Conc., ppm	10.6	5.62	3.48			
% Error	-0.7	1.8	-1.1 <sup>/</sup>			
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.9089	2.3742	0.9996	2	0.08	
DMS	1	2	3			
Time	06:02	06:53	07:08			
Concentration, ppm	6.95	3.60	2.29			
Area, mv-sec	10519	2932	1347			
Calc. Conc., ppm	7.00	3.53	2.32 /			
% Error	0.8	-2.0	1.2			
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8617	2.4483	0.9995	2	0.07	p.
DMDS	1	2	3			
Time	06:02	06:53	07:08			
Concentration, ppm	5.41	2.80	1.79			
	45399	14119	5786			
Area, mv-sec	40000	11110				
Area, mv-sec Calc. Conc., ppm	5.37	2.86	1.77			
· ·						
Calc. Conc., ppm	5.37	2.86	1.77 j	Min. Area	Det. Lim.	



## **CALIBRATION DATA**

Number 2

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 1

Method 16

Project Number: **15730.001.008**Operator: **VD**Date: **25 Jun 2021** 

•				3
Ambient Analyte	Temperature: 72°C H <sub>2</sub> S	Barometric I MeSH	Pressure: 29.70 in. DMS	Hg <b>DMDS</b>
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	460	457	298	232
Ret. Time, sec	25.0	35.0	63.0	132.0
1 Flow = 43.6 mL/Min	<b>10.5</b> ppm	<b>10.5</b> ppm	<b>6.82</b> ppm	<b>5.31</b> ppm
Time: 19:32		Peak Area	as, mv-sec	
	23668	22380	10086	46114
	24884	23771	10653	47622
	24624	24375	10810	50274
Average Area	24392	23509	10516	48003
2 Flow = 65.8 mL/Min	<b>6.99</b> ppm	<b>6.95</b> ppm	<b>4.53</b> ppm	<b>3.53</b> ppm
Time: 19:43		Peak Area	as, mv-sec	
	14069	11744	5164	24545
	13746	12537	5293	24899
	13905	12112	5280	24958
Average Area	13907	12131	5246	24800
3 Flow = 123 mL/Min	<b>3.74</b> ppm	<b>3.71</b> ppm	<b>2.42</b> ppm	<b>1.88</b> ppm
Time: 19:59			as, mv-sec	
	4288	3691	1547	7409
	4623	3823	1561	7662
	4672	3745	1545	7541
Average Area	4527	3753	1551	7538
•				





## **CALIBRATION SUMMARY**

Number 2

Method 16

Client: New Indy Location: Catawba, SC

Source: Paper Machine Vent 1

Project Number: 15730.001.008

Operator: VD

H <sub>2</sub> S	1	2	3			
Time	19:32	19:43	19:59			
Concentration, ppm	10.5	6.99	3.74			
Area, mv-sec	24392	13907	4527			
Calc. Conc., ppm	10.3	7.29	3.68			
% Error	-2.5	4.3	-1.6			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.6380	2.7299	0.9976	2	0.03	
MeSH	1	2	3			
Time	19:32	19:43	19:59			,
Concentration, ppm	10.5	6.95	3.71			
Area, mv-sec	23509	12131	3753			
Calc. Conc., ppm	10.3	7.11	3.68			
% Error	-1.4	2.4	-0.9			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.7779	2.5690	0.9992	2	0.05	
DMS	1	2	3			
Time	19:32	19:43	19:59			
Concentration, ppm	6.82	4.53	2.42			
Area, mv-sec	10516	5246	1551			
Calc. Conc., ppm	6.73	4.63	2.40			925
% Error	-1.3	2.2	-0.9			(F)
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
· ·	1.8539	2.4865	0.9993	2	0.07	
DMDS	1	2	3			
Time	19:32	19:43	19:59			
Concentration, ppm	5.31	3.53	1.88			
Area, mv-sec	48003	24800	7538			
Calc. Conc., ppm	5.23	3.62	1.86			
% Error	-1.6	2.7	-1.0			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.7949	3.3916	0.9990	2	0.02	



#### ANALYTES AND STANDARDS

Method 16

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 1

Project Number: 15730.001.008

Operator: VD

Date: 24 Jun 2021

<b>H₂S</b> 34.08	<b>MeSH</b> 48.11	<b>DMS</b> 62.14	<b>DMDS</b> 94.20
25.0	35.0	63.0	132.0
10.0	10.0	10.0	10.0
2	2	2	2
1	1	1	1
1.0	1.0	3.0	3.0
2.0	3.0	5.0	5.0
T-51831 642 460	33-50536 901 457	89-50725 758 298	89-53405 895 232
	34.08 25.0 10.0 2 1 1.0 2.0 T-51831 642	34.08 48.11 25.0 35.0 10.0 10.0 2 2 1 1 1.0 1.0 2.0 3.0  T-51831 33-50536 642 901	34.08     48.11     62.14       25.0     35.0     63.0       10.0     10.0     10.0       2     2     2       1     1     1       1.0     1.0     3.0       2.0     3.0     5.0       T-51831     33-50536     89-50725       642     901     758

Barometric Pressure: 29.70 in. Hg **Ambient Temperature:** 72 °F

No Oxygen Correction

PR<sub>nl</sub> =  $PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^{\circ} + T_a) / T_s] \times (P_s / P_b)$ 

Where:

PRnI = Permeation Rate by volume, nL/min = Permeation Rate by weight, ng/min PRna

 $V_{mol}$ = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

= Molecular Weight of compound W<sub>mol</sub>

= Ambient Temperature, °F Ţa

= Standard Temperature = 492°R (32 °F)  $\mathsf{T}_{\mathsf{s}}$ 

= Standard Pressure = 29.92 in Hg Ps

Pb = Barometric Pressure, in Hg

For example, H<sub>2</sub>S:

 $= 642 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.70)$ = 460 nL/min

To calclate concentrations:

C = PRni / Fd

Where:

C = Concentration, ppmv

 $PR_{nl}$ = Permeation Rate by volume, nL/min

= Flow rate of diluent, mL/min Fd



<sup>\*</sup>Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min. Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

#### INSTRUMENT INFORMATION

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 1

Method 16

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

File: E:\6-25-21.trs

Program Version: 2.0, built 21 Feb 2015

**Computer:** JWS-PROGRAMMING

Trailer: 271

Analog Input Device: Keithley KUSB-3108

GC Channel: 16

File Version: 2.0

Sampling Rate: 0.050 sec.

Data Interval: 0.5 sec.

Gas Chromatograph: GC-8A Serial No. C10494419420SA

**Detector Range: 10** 

9	Gases		Temperatures, °C	Columns
	Press. psi	Flow mL/min	Column: 100	Primary: 3'
H <sub>2</sub>	30	50	Detector: 120	Secondary:
Air	30	60		Sample Loop: 6" unlined
Carrier	50	30		

#### **Injection Cycle**

Total Length: 180 sec

Sampling Time: 160 sec

Load/Backflush Time: 85 sec

#### **Default Integration Parameters**

Signal Threshold 0.67 mv Peak detection window ±10 sec Minimum peak area 5 mv-sec Minimum peak height 5 mv above baseline

#### **Dynacalibrator**

Chamber Temperature 130.0°C **Ambient Temperature** 72.0°F Barometric Pressure 29.70 in. Hg



Number 1

Client: New Indy Location: Catawba, SC

Source: Paper Machine vent \

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Time	0	2	C	O <sub>2</sub>
Time	mv	%	mv	%
	PM ven	t 1 Ru	n 1	
09:07:29	6776	20.2	40	0.2
09:07:44	6774	20.2	41	0.2
09:07:59	6775	20.2	40	0.2
09:08:14	6774	20.2	43	0.2
09:08:29	6776	20.2	42	0.2
09:08:44	6773	20.2	43	0.2
09:08:59	6776	20.2	43	0.2
09:09:14	6777	20.2	43	0.2
09:09:29	6776	20.2	43	0.2
09:09:44	6773	20.2	42	0.2
09:09:59	6775	20.2	42	0.2
09:10:14	6775	20.2	40	0.2
09:10:29	6775	20.2	41	0.2
09:10:44	6773	20.2	41	0.2
09:10:59	6774	20.2	41	0.2
09:11:14	6774	20.2	39	0.2
09:11:29	6774	20.2	42	0.2
Avgs	6775	20.2	42	0.2

Number 2

Calibration 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent

Project Number: 15730.001.008

Operator: **VD** 

	0	2	C	$O_2$
Time	mv	%	mv	%
	PM ven	t 1 Ru	ın 2	
10:12:11	6777	20.2	36	0.2
10:12:26	6776	20.2	38	0.2
10:12:41	6774	20.2	37	0.2
10:12:56	6777	20.2	36	0.2
10:13:11	6774	20.2	37	0.2
10:13:26	6776	20.2	38	0.2
10:13:41	6775	20.2	37	0.2
10:13:56	6777	20.2	37	0.2
10:14:11	6775	20.2	37	0.2
10:14:26	6774	20.2	37	0.2
10:14:41	6773	20.2	38	0.2
10:14:56	6776	20.2	36	0.2
10:15:11	6776	20.2	36	0.2
10:15:26	6775	20.2	37	0.2
10:15:41	6774	20.2	36	0.2
10:15:56	6774	20.2	35	0.2
10:16:11	6776	20.2	37	0.2
10:16:26	6775	20.2	38	0.2
10:16:41	6773	20.2	37	0.2
10:16:56	6776	20.2	36	0.2
Avgs	6775	20.2	37	0.2

Number 3

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent \

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

<b>T</b> :	0	2	C	D <sub>2</sub>					
Time	mv	%	mv	%					
PM vent 1 Run 3									
11:20:14	6778	20.2	37	0.2					
11:20:29	6777	20.2	35	0.2					
11:20:44	6776	20.2	36	0.2					
11:20:59	6778	20.2	33	0.2					
11:21:14	6776	20.2	34	0.2					
11:21:29	6778	20.2	33	0.2					
11:21:44	6775	20.2	33	0.2					
11:21:59	6777	20.2	35	0.2					
11:22:14	6776	20.2	34	0.2					
11:22:29	6775	20.2	34	0.2					
11:22:44	6773	20.2	35	0.2					
11:22:59	6778	20.2	35	0.2					
11:23:14	6777	20.2	34	0.2					
11:23:29	6775	20.2	34	0.2					
11:23:44	6774	20.2	33	0.2					
11:23:59	6776	20.2	35	0.2					
11:24:14	6775	20.2	35	0.2					
11:24:29	6776	20.2	35	0.2					
11:24:44	6774	20.2	34	0.2					
11:24:59	6775	20.2	34	0.2					
11:25:14	6776	20.2	34	0.2					
Avgs	6776	20.2	34	0.2					

Number 4

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

	Time :	0	2	CC	)2	
	Time	mv	%	mv	%	
	11:31:32	3335	10.0	3225	9.9	
	11:31:47	3332	10.0	3232	9.9	
	11:32:02	3330	10.0	3232	9.9	
	11:32:17	3330	10.0	3236	9.9	
C	ylinder # SG916	8283BA	L 10.12	2 O2 a	nd 10.16	CO <sub>2</sub>
	11:32:32	3328	10.0	3235	9.9	
	11:32:47	3328	10.0	3238	9.9	
	11:33:02	3330	10.0	3237	9.9	
	11:33:17	3329	10.0	3237	9.9	
	11:33:32	3327	10.0	3240	9.9	
	11:33:47	3329	10.0	3241	9.9	
	11:34:02	3328	10.0	3237	9.9	
	11:34:17	3330	10.0	3242	9.9	
	11:34:32	3329	10.0	3239	9.9	
	11:34:47	3328	10.0	3238	9.9	
	11:35:02	3331	10.0	3239	9.9	
	11:35:17	3331	10.0	3238	9.9	
	11:35:32	3333	10.0	3235	9.9	
	11:35:47	3334	10.0	3235	9.9	
	Avgs	3330	10.0	3236	9.9	

## **CALIBRATION DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Start Time: 08:20

 $O_2$ 

Method: EPA 3A

Calibration Type: Linear Regression

**Calibration Results** 

 %
 Cylinder ID
 Result, mv

 Zero
 8

 10.1 / 19.5
 SG9168283BAL SG9168283BAL GC454190
 3287 G6576

**Curve Coefficients** 

**Slope** Intercept / Corr. Coeff. 336.7 / -31 0.9998

CO<sub>2</sub>

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

 %
 Cylinder ID
 Result, mv

 Zero
 5

 10.2 / SG9168283BAL
 3276

 20.4 CC454190
 6722

**Curve Coefficients** 

 Slope
 Intercept
 Corr. Coeff.

 329.3
 -20
 0.9999



## **CALIBRATION ERROR DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Start Time: 08:20

 $O_2$ 

Method: EPA 3A Span Conc. 19.5 %

**Slope** 336.7

Intercept -31.5

Standard % Zero	Response mv 8	Result % 0.1	Difference % 0.1	<b>Error</b> % 0.5 ~	Status Pass
10.1	3287	9.9	-0.2	-1.0	Pass
19.5	6576	19.6	0.1	0.5	Pass

CO<sub>2</sub>

Method: EPA 3A Span Conc. 20.4 %

**Slope** 329.3

Intercept -19.9

Standard % Zero 10.2	Response mv 5 3276	Result % 0.1 10.0	<b>Difference</b> % 0.1 -0.2	Error % 0.5 \ -1.0 \ 0.5 \	Status Pass Pass
20.4	6722	20.5	0.1	0.5	Pass



### **METHODS AND ANALYZERS**

Client: New Indy Project Number: 15730.001.008

Location: Catawba, SC Operator: VD

Source: Paper Machine vent Date: 25 Jun 2021

File: C:\Users\Trailer 271\Documents\New Indy\6-25-21.cem Program Version: 2.2, built 3 Jul 2020 File Version: 2.04

Computer: DESKTOP-GQ0I9UV Trailer: 271
Analog Input Device: Keithley KUSB-3108

#### Channel 1

Analyte O<sub>2</sub>

Method EPA 3A, Using Bias Analyzer Make, Model & Serial No. CAI 600 SN E07015-M

Full-Scale Output, mv 10000 Analyzer Range, % 20.0 Span Concentration, % 19.5

#### Channel 2

Analyte CO<sub>2</sub>

Method EPA 3A, Using Bias Analyzer Make, Model & Serial No. CAI 600 SN E07015-M

Full-Scale Output, mv
Analyzer Range, %
Span Concentration, %
10000
25.0
20.4



APPENDIX D



## VENT 2

New Indy Catawba, SC 15730.001.008 No. 2 Hood Exhaust Paper Machine Vent 2

#### **EMISSION CALCULATIONS**

Date Time Beg Time End				Run 1 6/24/21 1310 1410	Run 2 6/24/21 1416 1516	Run 3 6/24/21 1522 1622	Mean  
Volumetri BWS % Oxyger Recovery		M		5.20E+04 0.202 20.2 98.0	5.26E+04 0.187 20.2 98.0	5.45E+04 0.187 20.2 98.0	5.30E+04 0.192 20.2 98.0
Total Rec	duced Sulfur  Concentration, ppm Emission Rate, lb/hr	(TRS MW)=	34.08	0.82 0.23	0.78 0.22	0.72 0.21	0.77 0.22
H2S	Concentration, ppm Concentration, ppm (C Emission Rate, lb/hr	(H2S MW)=	34.08 overy)	0.30 0.31 0.08	0.20 0.20 0.06	0.26 0.27 0.08	0.25 0.26 0.07



New Indy Catawba, SC 15730.001.008 No. 2 Hood Exhaust

#### Paper Machine Vent 2

	TOOLUNETIC CALC	III ATIONS			
D M	ISOKINETIC CALC	ULATIONS 1	2	3	Mean
Run Number		6/24/21	6/24/21	6/24/21	
Date Time Page		1310	1416	1522	
Time Began		1401	1508	1613	
Time Ended	INPUT DAT		1300	1015	· ·
Sampling Time, min	(Theta)	48.0	48 ,	48	48
-	(Dia.)	55.875	55.875	55.875	55.875
Stack Diameter, in. Barometric Pressure, in. Hg	(Pb)	29.70	29.70	29.70	29.70
Static Pressure, in. H2O	(Pg)	-0.82	-0.82	-0.82	-0.82
Pitot Tube Coefficient	(Cp)	0.84	0.84	0.84	0.84
Meter Correction Factor	(Y)	1.0030	1.0030	1.0030	1.0030
Orifice Calibration Value	(Delta H@)	1.8000	1.8000	1.8000	1.8000
Nozzle Diameter, in.	(Dn)	0.250	0.250	0.250	0.250
Meter Volume, ft^3	(Vm)	30.104	30.681	30.709	30.498
Meter Temperature, °F	(Tm)	89.3	87.4	87.8	88.2
Meter Temperature, °R	(Tm-R)	549.3	547.4	547.8	548.2
Meter Orifice Pressure, in. H2O	(Delta H)	1.300 -	1.300	1.300	1.300
Ave Sq Rt Orifice Press, (in. H2O) <sup>1</sup> / <sub>2</sub>	((Delta H)½)avg)	1.140	1.140	1.140	1.140
Volume H2O Collected, mL	(VIc)	155.6	144.8	144.0	148.1
CO2 Concentration, %	(CO2)	0.2	0.2	0.2-	0.2
O2 Concentration, %	(O2)	20.2	20.2		20.2
Ave Sq Rt Velo Head, (in. H2O) <sup>\(\frac{1}{2}\)</sup>	((Delta P)½)avg)	1.207		1.244	1.218
Stack Temperature, °F	(Ts)	178.2	4=0.4	179.1	178.6
Stack Temperature, °R	(Ts-R)	638.2	638.4	639.1	638.6
Moisture Fraction (at Saturation)	(BWS)	0.496	0.498	0.506	0.500
Moisture Fraction (at Saturation)	CALCULATED		0.170	0.000	
22		3.41E-04	3.41E-04	3.41E-04	3.41E-04
Nozzle Area, ft <sup>2</sup>	(An)			17.03	17.03
Stack Area, ft <sup>2</sup>	(As)	17.03	17.03 29.64	29.64	29.64
Stack Pressure, in. Hg	(Ps)	29.64			29.80
Meter Pressure, in. Hg	(Pm)	29.80	29.80	29.80	
Standard Meter Volume, ft <sup>3</sup>	(Vmstd)	28.891	29.547	29.553	29.330
Standard Water Volume, ft <sup>3</sup>	(Vwstd)	7.324	6.816	6.778	6.973
Moisture Fraction (Measured)	(BWS)	0.202	0.187	0.187	0.192
Moisture Fraction (lower sat/meas)	(BWS)	0.202	0.187	0.187	0.192
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	28.84	28.84	28.84	28.84
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	26.65	26.81	26.82	26.76
Average Stack Gas Velocity, ft/sec	(Vs)	77.94	77.40	80.12	78.49
Stack Gas Flow, actual, ft <sup>3</sup> /min	(Qa)	79629	79074	81860	80188
Stack Gas Flow, Std , ft <sup>3</sup> /min	(Qs)	52043	52622	54475	53047
Calibration check	(Yqa)	1.0420	1.0207	1.0201	1.028
Percent difference from Y					2.45%

AMFOR SHV

55.875 Dia

0.003 Leak Checks Initial Page 1 of 1 K Factor @ Vac., in. Hg Volume, ft<sup>3</sup> Sample ID Pitot Filter ID in. H<sub>2</sub>O in. Hg T Stack Area / 7.03 ft<sup>2</sup> 16 Baro, Pressure\* 24,7 Static Pressure - 8.1 Total Traverse Points Impinger Gain Ambient Temp. Silica Gel Gain Method: EPA 4, Moisture .⊑ 0.84 4023 1.003 1,800 Console △H@ 1,800 Probe ID/Length PL66 -4023 Avg. Nozzle Diam. . 250 Pitot ID/Coeff. Thermo ID Console ID Meter Corr., Y Liner Material Nozzle ID/Diams. No. 3 Hood Exhaust 15730.001.008 Catawba, SC min. New Indy 6/24/ **Isokinetic Field Data** 1200 F CLOCK Test Personnel BLA SAMPLE TIME Sample Time Date Source Sample Location W. O. Number Run Number Client Location/Plant

COMMENTS							-											V <sub>m-std</sub> ,		23.51	Paper TVs. &	90.001.00 Machin #1-2 CE on Repo	e, Is
TRAIN	(in Hg)					0-												Max Vac Vn	Qs, dscfm % Isokinetic	Calculated by	o -		
		5	S	~)	12	10	N	N	M	W.	N	W	M	3	N	(4)	1		le Check		alt		
IMPINGER	TEMP (°F)	62	53	64	48	33	64	20	40	53	20	20	64	65	20	50	15	Max Temp	Thermocouple Check	Ref. Temp, °F	Result		
FILTER	TEMP (°F)	N/A															7	Min/Max	The	R			
FILTER BOX	TEMP (°F)	245	445	243	241	247	862	7/62	2%5	242	245	244	245	542	542	543	262	Min/Max	M3A				
PROBE F							11000		1338			1			196			247/25 241,	O <sub>2</sub> /CO <sub>2</sub> by Orsat Fyrite Leak Check, Pre-run	Post-run			
			250		150	252	1254	244	253	255		25,	25/	252	252	253	,256	Min/	O <sub>2</sub> /CO <sub>2</sub> by Orsat F Leak Check, Pre-run	Pos			
	F) TEMP (*F)	189	89	96	96	90	90	10	88	60	87	90	89	89	89	83	89	Sq. 3	O <sub>2</sub> /C( Leak				
	TEMP (*F)	N/A															>		ion				
TEMP	(L)	178	178	178	178	178	178	173	180	178	179	179	179	178	178	178	175	178.2°	Somposit %	ioxide, %	%		
READING (ft <sup>3</sup> )	.696	4.	2		0.	0	1	9	3.6	.5	4.	.3	3	1	6	90	468.800	20, 104	Flue Gas Composition Oxygen, %	Carbon Dioxide, %	Moisture, %		
REA	638.6	(46)	642	669	646.0	648.0	649.	1051.4	683.1	655.	157	689.	6 to 1	663	649.	666.8	668	Total		1			
PRESSURE AH	(in. H <sub>2</sub> O)	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	 2	F. 3	. 300 AH	HOY GAH				
PRESSURE ∆P	(in. H <sub>2</sub> O)	10	7	7	7				~	7	~					1		2075 1		Ci A			
		1.5				1.0	1.6	1.3	1		1.2	1.4	1.4	1.4	1.4	1.9	-:		1-463	Comments			
I IIME (plant time)	13:10		De la														19:61	at port elevati	52		ices		
(min)	0	3	ဖ	<sub></sub>	12	15	18	21	24	27	30	33	36	39	42	45	48	*Barometric Pressure is at port elevation		SOUTHONS	Integrated Air Services		
POINT	2	A-1	2	е	4	5	9	7	80	B-1	2	3	4	5	9	7	80	*Baromet	WIE.		Integrate	11	10
	No. 17																						

Page 1 of 1	K Factor My Leak Checks		Wolume, ft	tot	Sample ID ron 2	IMPINGER	TEMP (°F) (in Hg)	62 2	60 2	57 2	2 79	56 2		58 2	69	60 2	62 2	2 27	7 99	67 2	44 2	15 2 2	62 . 2	Max Temp Max Vac Vm-std.	Qs, dscfm % Isokinetic	Calculated by		1.008 hine, : CBs eport
	in. Hg	m	<b>Б</b> ,	ft <sup>2</sup> Filter ID	16 Sam	FILTER FILTER BOX EXIT	TEMP (°F) TEMP (°F)	3 W/A	2	-	2	1 2	6	6	4	15	5	/ /	7	2	\$	7	1 5	Min/Max Min/Max				
	emp. 81 sure* <b>29.70</b> sure <b>.82</b>		Gain &.c	Stack Area (7, 63			TEMP (TP)	252 243	2	252 296	254 243	252 247	253 249	258 239	256 244	256 24	299 24	252 24,	250 24	25/ 24	42 642	25/ 24	-	299758 237/	O <sub>2</sub> /CO <sub>2</sub> by Orsat Fyrite I	Post-run		
, Moisture	Ambient Temp. Baro. Pressure* Static Pressure	Impinger Gain	Silica Gel Gain	Stack	Total Traverse Points	DGM DGM INLET OUTET	TEMP (°F) TEMP (°F)	/A 88	88	800	700	87	87	38	88	88	87	88	87	87	87	0,0	760	8.7.47	O <sub>2</sub> /CO <sub>2</sub>			
od: EPA 4,	3 00		0.84	8	in.	STACK DC TEMP INL	ر <sup>ام) الم</sup> رزم (۴). TEMI	178 N/	1 821	178	179	179	129	176	176	176	179	179	179	179	/80	180	180 小	4vg Ts.4	omposition	)xide, %		
Method:	402	2	oeff. P77	ams.	liam250	DRY GAS METER READING (ft³)	669.605	671.5	673.3	675.3	677.2	1.14.1	(-8). I	483.0	684.0	1.86.9	698.8	7'069	692.6	694.4	696.3	(98.3	700.286	Total Volume / 36.681	Flue Gas Composition Oxygen %	Carbon Dioxide, %		
	Console ID Meter Corr., Y Console ∆H@	Probe ID/Length	Pitot ID/Coeff.	Thermo ID  Nozzle ID/Diams	Avg. Nozzle Diam.	ORIFICE , PRESSURE	(in. H <sub>2</sub> O)	1.3	1.3	1.3	1.3	. 3		1.3	1.3	1.3	1.3			1.3		1.3	101	1.360/	1. 1402 JAH			
æ	No Hood Exhaust	15730 001 008	2	160	min.		(in. H <sub>2</sub> O)	1,3	1.2	1.2	1.3	1.4	1.4	.5	. C	1.5	1.5	1.7	1.7	1.7	1.9	p.	-	1,2024	>	Comments		
eld Data	Catawba, No. Hood B	16730	00.00	16/24/2	de	CLOCK. TIME (plant time)	14:16																15:08	*Barometric Pressure is at port elevation	5		VICES	
<b>Isokinetic Field</b>	Client Location/Plant Source	Sample Location	Run Number	Date Test Personnel	Sample Time	SAMPLE TIME (min)	0	က	9	თ	12	15	18	21	24	27	30	33	36	39	45	45	48	metric Pressure		Integrated Air Services	ונבת עווי זכן	
Isokin	Loca	Sample	Rur Rur	Test F	San	TRAVERSE	ON	A-1	2	ო	4	2	9	7	ω	B-1	2	60	4	5	9	7	∞	*Baroi	W	Integra	III WE	111

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									The day				,	Prefix Park	1573	0.001.008 Machine
rctor W/A Leak Checks Initial Final 12" 5" 19 12" 5"	SAMPLE TRAIN VACUUM (in Hg)	nn	W. S.	20 20	200	8	~ M	3	3	cy (	2 M	X	Max Vac Vm-std:	Q <sub>s</sub> , dscfm % Isokinetic	Calculated by Calculated Calculat	Machine, #1-2 CBs on Report
K Fa Volume, ft³ @ Vac., in. H Pitot ID W	IMPINGER EXIT TEMP (°F.)	57	から	51	52	25	22	21		50			ax Temp	ole C	Ref. Temp, °F Result	
Hg H <sub>2</sub> O Volu @ V Filter ID Sample ID	FILTER EXIT TEMP (°F) <sub>\$\epsilon</sub>	N/A										7	MipMax	The	œ.	
16 H 2 B H 15 H	FILTER BOX TEMP (°F).	242	292	262	247	245	243	142	242	247	248	167	Min/Max 291/298	-		
emp. 61 sure- 62 Sain 136.9 Sain 5.1	PROBE TEMP (°F)	255	282	842	251	052	252	250	249	251	252	452	248/255 24 Min	O <sub>2</sub> /CO <sub>2</sub> by Orsat Fyrite Leak Check, Pre-run	Post-run	
Ambient Temp. Baro. Pressure* Static Pressure Impinger Gain Silica Gel Gain	PROFESSION AND DESIGNATION OF THE PERSON OF	2000	00 00 V 00	88	82	87	8 8	~	88		000	89	8	O <sub>2</sub> /CO <sub>2</sub> Leak Che		
Method: EPA 4, Moisture   46.23   Ambient   1.003   Static Present   1.003   Static Present	DGM: INLET TËÑP (°F)	A/A										7	Avg	ion		
33 33 33 52 53 0.8	σ.	180	179	180	179	179	22	179	13	179	1961	3179	/ MaTs	Flue Gas Composition Oxygen, %	Carbon Dioxide, % Moisture, %	
7 2 2	DRY GAS METER READING (ft')	764.5	706.4	710.3	714.1	716.0	719.8	721.7	723.6	725.5	729.3	731.273	Total Volume <b>30.769</b>	Flue Gas Co	Carbon Diox Moisture, %	
Console ID Meter Corr., Y Console AH® Probe ID/Length Liner Material Pitot ID/Coeff Thermo ID Nozzle ID/Diams. Avg. Nozzle Diam.	ORIFICE PRESSURE AH (in, H <sub>2</sub> O)	1.3		6.7		1.3	2:5	5.7		50		1.3	1.300 V	1.1902 VAH		
Data New Indy Catawba, SC 2 Hood Exhaust  15730.001.008 3 29/2  SE min.	VELOCITY PRESSURE Ap (in. H <sub>2</sub> O)	1.5		1:7	1.7	1.5	กัก	5:1	1.6	١٠.		1.3	(,2443	>	Comments	
044	CLOCK TIME (plant time)											16:13	*Barometric Pressure is at port elevation	52		
Client Cocation/Plant Source ample Location A W. O. Number Run Number Date Cast Personnel	SAMPLE TIME (min)	m 0	9 12	15	21	24	30	33	36	39	45	48	etric Pressure is		Integrated Air Services	
Sample Location/Plant Sample Location/Plant Source No. O. Number Run Number Date Test Personnel	TRAVERSE POINT NO	A-1	ω 4	5 0	7	8	B-1	8	4	ro a	0 1	8	*Barom	W.E	Integrate	112

# **Sample Recovery Field Data**

Method: EPA 4, Moisture

Location	Client	New Indy			Source		Hood Exhau	ust
Location	/Plant	Catawba, SC			V.O. Number	157	30.001.008	
		Imp	ingers 1 - 3 measur	ements in grams				
Run No.	1		Sample Date	6/24/21	Red	overy Date	6/21/	21
Sample ID	Roul		Filter ID	NA		Analyst	BA	
			Im	pingers				
Contents	1	2	3			Imp.Total	Silica Gel	Total
Final	835. 1	721 7	T110 2				grams	
Initial		721.3	560.2				877.7	
Gain	742.4	668.1	556.9			1110	893.5	n 1
	92.7	53.2	3.3/			148.2	6-10	155.6
lm	pinger Color	clear	<u> </u>		Labled?	//	6.4	, /
Silica G	el Condition(	2012			Sealed?			
							Maria VIII II.	
Run No.			Sample Date	6/24/41	Rec	overy Date	6/24/	21
Sample ID	Ru	2		NA		Analyst	21	
				pingers		The sta		100
	1	2	3			Imp.Total	Silica Gel	Total
Contents	01.0						grams	
Final	868.1	841.8	648.0				874.7	
Initial	752.4	824.3	645.0			/	866.1	
Gain	115.7/	17.5	3 /			136.2	8.6	144.8
Im	pinger Color	lear	./		Labled?	1	/	/
Silica G	el Condition	2002			Sealed?			
Run No.	3		Sample Date	6/24/21	Rec	overy Date	6/24/2	'
Sample ID	Run 3		Filter ID	NA		Analyst	BA	
				pingers				
Contents	1	2	3			Imp.Total	Silica Gel	Total
Final	01.6 =	1.01 -	FF2 91				grams	
Initial	26.5	1191	553.9				905.0	Tueste Total
Gain	760.2	669:1	556.9		177 1011	100/	899.9	11/1/2
	108.3/	27.6	3/			138.9	5.1/	144.0
	oinger Color(	Irac /	V		Labled?	Ve		1
Silica G	el Condition	ood			Sealed?	•		
		Ch	eck COC for Sample ID:	s of Media Blanks	/			

Integrated Air Servie

# Sample and Velocity Traverse Point Data Sheet - Method of Pres, #3 Paper Machine, #2-3 SDTVs, & #1-2 CBs Emission Report

Clien	t	New Indy		Ope	rator	VD / LF
Loaction/Plan	t	Catawba, SC	_		Date	15-Jun-21
Source	e	No. 2 Hood Exhaust	_	W.0, No	umber	15730.001.008
Duct Type	<b>V</b>	Circular		Rectangular Duct		Indicate appropriate type
Traverse Type		Particulate Traverse	7	Velocity Traverse		

Distance from far wall to outside of port (in.) = C	56.000
Port Depth (in.) = D	0.125
Depth of Duct, diameter (in.) = C-D	55.875
Area of Duct (ft <sup>2</sup> )	17.03
Total Traverse Points	16
Total Traverse Points per Port	8

Rectangular Ducts Only	
Width of Duct, rectangular duct only (in.)	
Total Ports (rectangular duct only)	

Traverse Point Locations												
Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)									
1	3.2	2	2									
2	10.5	6	6									
3	19.4	11	11									
4	32.3	18	18									
5	67.7	38	38									
6	80.6	45	45									
7	89.5	50	50									
8	96.8	54	54									
9												
10												
11												
12												

Equivalent Diameter = (2\*L\*W)/(L+W)

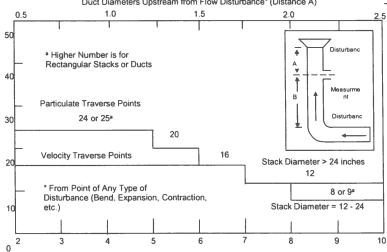
		Traverse Point Location Percent of Stack -Circular												
	ľ		Number of Traverse Points											
		1	2	3	4	5	6	7	8	9	10	11	12	
-	1		14.6		6.7		4.4		3.2		2.6		2.1	
.	2	1500	85.4		25		14.6	100	10.5		8.2	Elli	6.7	
	3				75		29.6		19.4		14.6		11.8	
/ L	4				93.3	ELEM	70.4	77	32.3	No.	22.6	What.	17.7	
0 6	5						85.4		67.7		34.2		25	
a	6	DO	1600			TO THE	95.6	GUE.	80.6		65.8	37,12	35.6	
e t	7								89.5		77.4		64.4	
i i	8	Part of				THAT	8		96.8	000	85.4	Serie	75	
o o	9										91.8		82.3	
i	10		10/18/19		A LANGE	Zilák.	1000			300	97.4	UM	88.2	
n	11												93.3	
t	12		- 100	100			2015		1	186	1301		97.9	

Port Diam. (in) =	4
Number of Ports =	_2_

Flow Disturbances										
Upstream - A (ft)	7.208									
Downstream - B (ft)	25.0									
Upstream - A (duct diameters)	1.55									
Downstream - B (duct diameters) 5.3										

Diagram of Stack

Duct Diameters Upstream from Flow Disturbance\* (Distance A) 1.5

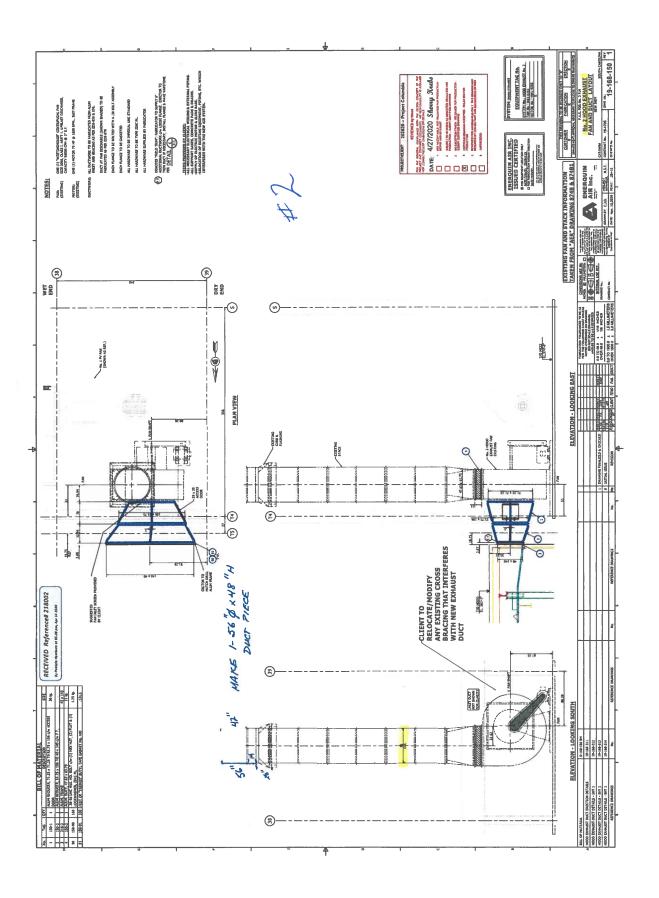


Duct Diameters Downstream from Flow Disturbance\* (Distance B)

			Tr	averse	Point	Locati	on Pe	rcent o	f Stacl	k -Rect	angula	31	
						Numbe	er of Tra	verse	Points				
		1	2	3	4	5	6	7	8	9	10	-11	12
	ì		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
	2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
	3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
L	4	48.8	SARA		87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
C	5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
s a e t	6		934	1000		1	91.7	78.6	68.8	61.1	55.0	50.0	45.8
	7							92.9	81.3	72.2	65.0	59.1	54.2
i	8	2000	733	121618	305				93.8	83.3	75.0	68.2	62.5
n	9									94.4	85.0	77.3	70.8
"	10		148	8,215	dan.	1000	100	333	A STATE		95.0	86.4	79.2
n t	11				T .							95.5	87.5
	12	75.00	10-11	S 1			Man	947	60		85		95.8

Rectangular
Stack Points
& Matrix
9 - 3 x 3
12 - 4 x 3
16 - 4 x 4
20 - 5 x 4
25 - 5 x 5
30 - 6 x 5
36 - 6 x 6
42 - 7 x 6
49 - 7 x 7

Tape Measure I.D. # TM-07



#### **RUN SUMMARY**

Number 4

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 3

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

Date: 24 Jun 2021

Start Time 13:10 En

**End Time 14:10** 

Average Measured TRS Conc.

Recovery No. 3

**TRS Corrected for Recovery** 

0.80 0.<del>07</del> ppm

98.0 % 0.68 ppm

0.82 0.740.82





#### **RUN SUMMARY**

Number 5

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 3

**Y** 

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

Date: 24 Jun 2021

Start Time 14:16

**End Time 15:16** 

Average Measured TRS Conc. Recovery No. 3 TRS Corrected for Recovery 0.61 ppm 98.0 % 0.62 ppm

0.48

Alsa V



#### **RUN SUMMARY**

Number 6

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 37

Method 16

Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 24 Jun 2021

Start Time 15:22 **End Time** 16:22

**Average Measured TRS Conc. Recovery No. 3 TRS Corrected for Recovery** 

0.56 ppm 98.0 % 0.57 ppm Q165 0.72



Number 4

			TRS	mdd		0.86	99.0	0.81	0.63	0.64	0.67	0.82	0.58	1.20	1.09	0.52	0.86	0.91	0.55	1.14	0.91	0.69	0.73	0.72	0.92	0.80
1.008	3	121		v			0.027	0.027	0.027	0.027	0.027			0.027			0.027	0.027		0.027	0.027	0.027		0.027	0.027	
15730.001.008	VD	24 Jun 2021	DMDS	mdd		0.11						0.09	0.07		0.12	0.08			0.11				0.08			
umber:	Operator:	Пате		area		59	<b>~</b>	<2	<2	<2	<b>~</b>	20	<del></del>	<b>~</b>	31	15	<b>~</b>	<b>~</b>	28	7	<2	<b>~</b>	16	<b>~</b>	<2	
Project Number:	Ö			v			0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091		0.091	0.091		0.091	0.091		0.091	0.091	0.091	0.091	
			DMS	mdd	0	0.18									0.40			0.24			0.29					
				area		∞	<2	<b>~</b>	<2	<2	<b>~</b>	<b>4</b>	<2	<b>%</b>	37	<b>~</b>	<b>%</b>	4	<b>~</b>	<b>~</b>	19	<b>%</b>	<b>~</b>	<b>~</b>	<2	
	Method: 16	Calibration:		V												0.095			0.095	0.095	0.095					
	≥ (	Ca	MeSH	ppm		0.13	0.22	0.45	0.21	0.29	0.35	0.20	0.18	0.53	0.30		0.56	0.33				0.26	0.27	0.34	0.34	
				area		4	10	44	တ	200	27	တ	7	09	19	<2	99	24	<b>~</b>	\$	<2	15	16	25	25	
		ent 3		٧																						
×	a, SC	Paper Machine Vent 3	H <sub>2</sub> S	mdd	on PM vent 2	0.32	0.29	0.21	0.27	0.20	0.17	0.35	0.17	0.53	0.15	0.18	0.16	0.28	0.14	06.0	0.47	0.29	0.21	0.23	0.44	0.30
New Indy	Catawba, SC	Paper M		area	Run 1 on	31	26	14	23	13	10	36	10	78	∞	10	∞	24	9	217	64	24	14	16	22	
Client:	Location:	Source:		Time		13:10	13:13	13:16	13:19	13:22	13:25	13:28	13:31	13:34	13:37	13:40	13:43	13:46	13:49	13:52	13:55	13:58	14:01	14:04	14:07	Averages

Number 5

Method: 16         Designation: 1         Organized and a part of a par		New Indy	nay to								Project Number:	vamper:	15/30.001.008	1.008	
Aurea         ppm         calculation. If Academy and the perm of the per	Location:	Cataw	/ba, SC	6 4 1			<b>-</b> (	Method: 16	· ·		0	perator:	VD	3	
Run 2         Pom vent 2         Area         ppm         c         area         area         ppm </th <th>Source.</th> <th>raper</th> <th>Macnine</th> <th>/ent 3</th> <th></th> <th></th> <th>) I</th> <th>alibration.</th> <th>-</th> <th>OMO</th> <th></th> <th>Date.</th> <th>24 Jun 2</th> <th>120</th> <th>G C</th>	Source.	raper	Macnine	/ent 3			) I	alibration.	-	OMO		Date.	24 Jun 2	120	G C
Aurea         ppm         c         area         ppm         c         area         ppm         c         area         ppm         c           Run 2         PM Vent 2         0.036         c2         0.095         c2         0.091         c2         0.092         c2         0.091         c2         0.092         c2         0.014         c2 <th></th> <th></th> <th><b>ב</b>ֿ</th> <th>20</th> <th></th> <th></th> <th>Meon</th> <th></th> <th></th> <th>S S</th> <th></th> <th></th> <th>DIAD S</th> <th></th> <th>2</th>			<b>ב</b> ֿ	20			Meon			S S			DIAD S		2
Num 2         PM vent 2         0         <	Time	area	bpm	v		area	mdd	v	area	ppm	<b>v</b>	area	mdd	<b>v</b>	ppm
42         0.076         0.08         42         0.095         42         0.091         42         0.0		Run 2	PM vent 2						_						0
17         0.23         0.023         9         0.20         <2	14:16	<b>~</b>		0.076	0.08	7		0.095	<b>%</b>		0.091	?		0.027	0.32
91         0.67         0.67         <2         0.096         31         0.37         <2         0.027           59         0.45         25         0.34         <2	14:19	17	0.23		0.23	တ	0.20		<b>%</b>		0.091	2	0.04		0.61
59         0.45         0.45         25         0.34         <2         0.091         <2         0.097         <2         0.027         0.027         0.025         <2         0.035         13         0.24         13         0.07         0.027	14:22	91	0.57		0.57	<b>%</b>		0.095	31	0.37		\$		0.027	1.08
19         0.25         0.25         <2         0.095         13         0.24         13         0.07           6         0.13         40         0.43         <2         0.095         12         0.22         11         0.07           4         0.11         2.53         1.10         <2         0.091         <2         0.091         <2         0.01           20         0.26         2.5         0.34         5         0.14         6.2         0.17         0.02           20         0.26         2.5         0.34         6         0.095         <2         0.091         <2         0.17            0.076         0.08         <2         0.095         <2         0.31         49         0.15            0.076         0.08         7         0.17         <2         0.091         <2         0.091         <2         0.091            0.59         <2         0.095         <2         0.091         <2         0.091         <2         0.091            0.17         1.7         0.28         0.095         <2         0.091         <2         0.091	14:25	29	0.45		0.45	25	0.34		<b>%</b>		0.091	<b>~</b>		0.027	0.94
6         0.13         0.13         40         0.43         <2         0.091         25         0.10           <2	14:28	19	0.25		0.25	<b>~</b>		0.095	13	0.24		13	0.07		0.73
<2         0.076         0.08         <2         0.095         12         0.22         11         0.07         0.027           4         0.11         253         1.10         <2	14:31	9	0.13		0.13	40	0.43		<b>%</b>		0.091	25	0.10		0.86
4         0.11         0.11         253         1.10         <2         0.091         <2         0.097         <2         0.017         0.26         25         0.34         5         0.14         62         0.17         0.027           <2	14:34	<2		0.076	0.08	<b>~</b>		0.095	12	0.22		7	0.07		0.53
20         0.26         0.26         25         0.34         5         0.14         62         0.17           <2	14:37	4	0.11		0.11	253	1.10		<b>%</b>		0.091	<b>%</b>		0.027	1.35
<2         0.076         0.08         <2         0.095         <2         0.091         17         0.09           <2	14:40	20	0.26		0.26	25	0.34		2	0.14		62	0.17		1.07
<2       0.076       0.08       50       0.48       22       0.31       49       0.15         <2	14:43	<b>~</b>		0.076	0.08	<2		0.095	<2		0.091	17	0.09		0.43
<2       0.076       0.08       <2       0.095       <2       0.091       <2       0.027         <2	14:46	<2		0.076	0.08	20	0.48		22	0.31		49	0.15		1.16
<2       0.076       0.08       7       0.17       <2       0.091       15       0.08         <2	14:49	<b>~</b>		0.076	0.08	<b>~</b>		0.095	<b>~</b>		0.091	<2		0.027	0.32
<2	14:52	<b>~</b>		0.076	0.08	7	0.17		<2		0.091	15	0.08		0.50
97         0.59         <2         0.095         <2         0.095         <2         0.095         34         0.39         48         0.027           32         0.33         0.33         <2	14:55	<b>~</b>		0.076	0.08	83	0.62		26	0.50		<b>%</b>		0.027	1.25
32     0.33     6.33     4     0.095     34     0.39     18     0.09       9     0.17     17     0.28     10     0.21     13     0.07       <2	14:58	26	0.59		0.59	<b>~</b>		0.095	<2		0.091	7		0.027	0.83
9     0.17     17     0.28     10     0.21     13     0.07       <2	15:01	32	0.33		0.33	<b>~</b>		0.095	34	0.39		<del>0</del>	0.09		0.98
<2       0.076       0.08       <2       0.095       <2       0.091       <2       0.027         9       0.17       6       0.17       <2	15:04	တ	0.17		0.17	17	0.28		10	0.21		13	0.07		0.80
9     0.17     6     0.17     <2     0.091     <2     0.027       13     0.20     0.20     7     0.18     13     0.24     <2	15:07	<2		0.076	0.08	<2		0.095	<2		0.091	<b>%</b>		0.027	0.32
13     0.20     0.20     7     0.18     13     0.24     <2     0.027       0.20     0.20	15:10	တ	0.17		0.17	9	0.17		<b>~</b>		0.091	7		0.027	0.48
0.20	15:13	13	0.20		0.20	7	0.18		13	0.24		<2		0.027	0.68
	Averages	i			0.20										0.76

Number 6

			TRS	ppm	0	0.40	0.95	1.24	0.83	0.69	92.0	0.92	1.21	0.82	0.48	0.73	0.58	09.0	0.57	09.0	0.58	0.48	0.46	0.69	0.59	0.71
1.008		021		v		0.027	0.027	0.027		0.027		0.027	0.027		0.027		0.027	0.027	0.027	0.027	0.027		0.027	0.027		
15730.001.008	ΛD	24 Jun 2021	DMDS	mdd					0.07		0.08			0.10		0.14						90.0			0.16	
Project Number:	Operator:	Date:		area		7	7	7	7	\$	17	\$	7	22	<b>~</b>	43	<b>~</b>	7	7	<b>%</b>	<b>~</b>	တ	<b>~</b>	<b>~</b>	09	
Project N	0			v		0.091		0.091				0.091		0.091	0.091	0.091		0.091	0.091		0.091	0.091	0.091		0.091	
			DMS	ppm			0.42		0.43	0.28	0.20		0.30				0.21			0.38				0.15		
	10	-		area	0	%	41	7	43	18	တ	7	21	<b>~</b>	<2	<b>~</b>	<del>-</del>	<b>~</b>	<b>~</b>	33	<b>~</b>	<b>~</b>	<b>~</b>	2	<2	
	Method: 16	Calibration:		v		0.095		0.095	0.095				0.095				0.095		0.095	0.095		0.095			0.095	
	Σ	Ca	MeSH	bpm			0.26			0.16	0.18	0.33		0.45	0.19	0.20		0.24			0.15		0.24	0.32		
				area		7	14	<b>%</b>	<b>%</b>	2	7	24	<b>%</b>	43	∞	တ	<b>%</b>	13	<b>%</b>	<b>~</b>	2	<2	12	22	<2	
						0.16	0.22	1.00	0.17	0.20	0.21	0.45	0.75	0.09	0.15	0.16	0.22	0.22	0.33	0.08	0.29	0.17	0.08	0.17	0.08	0.26
		ent 3	(0)	V																0.076			0.076		0.076	
_	sc,	Paper Machine Vent 3	H <sub>2</sub> S	mdd	PM vent 2	0.16	0.22	1.00	0.17	0.20	0.21	0.45	0.75	60.0	0.15	0.16	0.22	0.22	0.33		0.29	0.17		0.17		
New Indy	Catawba, SC	Paper Ma		area	Run 3 P	ω	14	266	တ	12	13	28	154	က	7	ω	15	4	32	<b>~</b>	24	10	<b>~</b>	တ	<2	
Client:	Location:	Source:		Time	4	15:22	15:25	15:28	15:31	15:34	15:37	15:40	15:43	15:46	15:49	15:52	15:55	15:58	16:01	16:04	16:07	16:10	16:13	16:16	16:19	Averages

Number 4

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 2

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

Time	Н	<sub>2</sub> S	Me	eSH .	D	MS	DN	/IDS	TRS
 	area	ppm	area	ppm	area	ppm	area	ppm	ppm
			F	Run 1 on P	M vent	2			
13:10	31	0.32	4	0.13	8	0.18	29	0.11	0.86
13:13	26	0.29	10	0.22	<2	< 0.091	<2	< 0.027	0.51
13:16	14	0.21	44	0.45	<2	< 0.091	<2	< 0.027	0.66
13:19	23	0.27	9	0.21	<2	< 0.091	<2	< 0.027	0.48
13:22	13	0.20	18	0.29	<2	< 0.091	<2	< 0.027	0.49
13:25	10	0.17	27	0.35	<2	< 0.091	<2	< 0.027	0.53
13:28	36	0.35	9	0.20	<2	< 0.091	20	0.09	0.73
13:31	10	0.17	7	0.18	<2	< 0.091	11	0.07	0.49
13:34	78	0.53	60	0.53	<2	< 0.091	<2	< 0.027	1.06
13:37	8	0.15	19	0.30	37	0.40	31	0.12	1.09
13:40	10	0.18	<2	< 0.095	<2	< 0.091	15	0.08	0.34
13:43	8	0.16	66	0.56	<2	< 0.091	<2	< 0.027	0.71
13:46	24	0.28	24	0.33	14	0.24	<2	< 0.027	0.85
13:49	6	0.14	<2	< 0.095	<2	< 0.091	28	0.11	0.36
13:52	217	0.90	<2	< 0.095	<2	< 0.091	<2	< 0.027	0.90
13:55	64	0.47	<2	< 0.095	19	0.29	<2	< 0.027	0.76
13:58	24	0.29	15	0.26	<2	< 0.091	<2	< 0.027	0.54
14:01	14	0.21	16	0.27	<2	< 0.091	16	0.08	0.64
14:04	16	0.23	25	0.34	<2	<0.091	<2	<0.027	0.57
14:07	55	0.44	25	0.34	<2	<0.091	<2	<0.027	0.78
Average		0.30		0.25		<0.091		0.03	0.67





Number 5

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 32

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Time	H	I₂S	M	eSH	D	MS	DI	<b>IDS</b>	TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
				Run 2 Pl	M vent 2	2			
14:16	<2	< 0.076	<2	< 0.095	<2	< 0.091	<2	< 0.027	_
14:19	17	0.23	9	0.20	<2	< 0.091	5	0.04	0.52
14:22	91	0.57	<2	< 0.095	31	0.37	<2	< 0.027	0.93
14:25	59	0.45	25	0.34	<2	< 0.091	<2	< 0.027	0.79
14:28	19	0.25	<2	< 0.095	13	0.24	13	0.07	0.64
14:31	6	0.13	40	0.43	<2	< 0.091	25	0.10	0.77
14:34	<2	< 0.076	<2	< 0.095	12	0.22	11	0.07	0.36
14:37	4	0.11	253	1.10	<2	< 0.091	<2	<0.027	1.21
14:40	20	0.26	25	0.34	5	0.14	62	0.17	1.07
14:43	<2	< 0.076	<2	< 0.095	<2	< 0.091	17	0.09	0.17
14:46	<2	< 0.076	50	0.48	22	0.31	49	0.15	1.09
14:49	<2	< 0.076	<2	< 0.095	<2	< 0.091	<2	< 0.027	_
14:52	<2	< 0.076	7	0.17	<2	< 0.091	15	0.08	0.33
14:55	<2	< 0.076	83	0.62	56	0.50	<2	< 0.027	1.12
14:58	97	0.59	<2	< 0.095	<2	< 0.091	<2	< 0.027	0.59
15:01	32	0.33	<2	< 0.095	34	0.39	18	0.09	0.89
15:04	9	0.17	17	0.28	10	0.21	13	0.07	0.80
15:07	<2	< 0.076	<2	<0.095	<2	< 0.091	<2	< 0.027	-
15:10	9	0.17	6	0.17	<2	< 0.091	<2	< 0.027	0.34
15:13	13	0.20	7	0.18	13	0.24	<2	<0.027	0.62
Average		0.17		0.22		0.13		0.05	0.61





Number 6

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 2 2

Method 16 Calibration 1 Project Number: 15730.001.008
Operator: VD

Time	Н	I <sub>2</sub> S	M	eSH	D	MS	DI	/IDS	TRS
 	area	ppm	area	ppm	area	ppm	area	ppm	ppm
				Run 3 PI	W vent 2				
15:22	8	0.16	<2	< 0.095	<2	<0.091	<2	< 0.027	0.16
15:25	14	0.22	14	0.26	41	0.42	<2	<0.027	0.89
15:28	266	1.00	<2	< 0.095	<2	< 0.091	<2	<0.027	1.00
15:31	9	0.17	<2	< 0.095	43	0.43	11	0.07	0.73
15:34	12	0.20	5	0.16	18	0.28	<2	<0.027	0.63
15:37	13	0.21	7	0.18	9	0.20	17	0.08	0.76
15:40	58	0.45	24	0.33	<2	< 0.091	<2	< 0.027	0.78
15:43	154	0.75	<2	< 0.095	21	0.30	<2	< 0.027	1.06
15:46	3	0.09	43	0.45	<2	< 0.091	22	0.10	0.73
15:49	7	0.15	8	0.19	<2	< 0.091	<2	< 0.027	0.33
15:52	8	0.16	9	0.20	<2	< 0.091	43	0.14	0.64
15:55	15	0.22	<2	< 0.095	11	0.21	<2	<0.027	0.43
15:58	14	0.22	13	0.24	<2	< 0.091	<2	<0.027	0.46
16:01	32	0.33	<2	< 0.095	<2	< 0.091	<2	< 0.027	0.33
16:04	<2	< 0.076	<2	< 0.095	33	0.38	<2	<0.027	0.38
16:07	24	0.29	5	0.15	<2	< 0.091	<2	<0.027	0.44
16:10	10	0.17	<2	<0.095	<2	< 0.091	9	0.06	0.29
16:13	<2	<0.076	12	0.24	<2	<0.091	<2	<0.027	0.24
16:16	9	0.17	22	0.32	5	0.15	<2	<0.027	0.63
16:19	<2	< 0.076	<2	<0.095	<2	<0.091	60	0.16	0.33
 Average		0.25		0.14		0.12	-	0.03	0.56



#### **RECOVERY DATA**

Number 2

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 32

Method 16

Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 24 Jun 2021

After Run 3 Before Run 4

Start Time 12:45

**End Time** 12:55

SK

Recovery Gas to Probe, Time 12:45

Peak Areas, mv-sec

12908 1

13446 13416

Average

ppm

13257

7.84

Recovery Gas to GC, Time 12:51

Peak Areas, mv-sec

13746

14196

14064

Average

ppm

14002 8.07

Recovery 97.2%

#### **RECOVERY DATA**

Number 3

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 3 2

Method 16

Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 24 Jun 2021

After Run 6 Before Run 7

Start Time 16:23

**End Time** 16:31

SX

Recovery Gas to Probe, Time 16:23

Peak Areas, mv-sec

13311

13711

14111

Average

ppm

13711

7.98

Recovery Gas to GC, Time 16:28

Peak Areas, mv-sec

14746

14386 13597

Average

ppm

14243 8.14

Recovery 98.0%

## **CALIBRATION DATA**

Number 1

Client: New Indy Location: Catawba, SC

Source: Paper Machine Vent \$ 2

Method 16

Project Number: **15730.001.008**Operator: **VD**Date: **23 Jun 2021** 

Source. Paper Wacrime	venil > 1vi	etriod 16		ale. 23 Jun 2021
	Temperature: 72°C	Barometric F	Pressure: 29.60 in.	Hg
Analyte	H₂S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	461	458	299	233
Ret. Time, sec	25.0	35.0	63.0	132.0
1 Flow = 42.9 mL/Min	<b>10.8</b> ppm	<b>10.7</b> ppm	<b>6.97</b> ppm	<b>5.43</b> ppm
Time: 06:01			as, mv-sec	
	23635	22744	10268	43754
	23397	21865	10275	43943
	23478	22059	10303	44074
Average Area	23503	22223	10282	43924
2 Flow = 80.0 mL/Min	<b>5.77</b> ppm	<b>5.73</b> ppm	<b>3.73</b> ppm	<b>2.91</b> ppm
Time: 07:13		Peak Area	as, mv-sec	
-	8086	7277	3039	14674
	7612	6821	2896	13428
•	7977	6961	2956	14718
Average Area	7892	7020	2964	14273
3 Flow = 133 mL/Min	<b>3.46</b> ppm	<b>3.44</b> ppm	<b>2.24</b> ppm	<b>1.74</b> ppm
Time: 07:30		Peak Area	is, mv-sec	
	2749	2295	1139	5166
	2668	2461	1022	4984
	2689	2285	1136	5151
Average Area	2702	2347	1099	5100

#### **CALIBRATION SUMMARY**

Number 1

Client: New Indy

Location: Catawba, SC
Source: Paper Machine Vent 3 2

Method 16

Project Number: 15730.001.008 Operator: VD

					· · · · · · · · · · · · · · · · · · ·	
H₂S	4	2	2			
Time	<b>1</b> 06:01	<b>2</b> 07:13	<b>3</b> 07:30			9
	10.8	5.77	3.46			
Concentration, ppm	23503	7892	3.46 2702			
Area, mv-sec	10.6		3.40			
Calc. Conc., ppm % Error	-1.5	5.97 3.5	-1.9			
Calibration Curve	Slope			Min Anna	Da4 Lim	
Cambration Curve	1.9001	Intercept 2.4228	<b>Corr. Coeff.</b> 0.9986	Min. Area 2	Det. Lim.	
	1.8001	2.4220	0.9960	2	0.076	
MeSH	1	2	3			
Time	06:01	07:13	07:30			
Concentration, ppm	10.7	5.73	3.44			
Area, mv-sec	22223	7020	2347			
Calc. Conc., ppm	10.6	5.89	3.38			
% Error	-1.3	2.9	-1.5			
<b>Calibration Curve</b>	Slope	Intercept		Min. Area	Det. Lim.	
(%)	1.9758	2.3243	0.9991	2	0.095	
DMS	1	2	3			
Time	06:01	07:13	07:30			
Concentration, ppm	6.97	3.73	2.24			
Area, mv-sec	10282	2964	1099			
Calc. Conc., ppm	6.98	3.72	2.25			
% Error	0.2	-0.5	0.3			
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.9707	2.3484	>0.9999	2	0.091	
						10
DMDS	1	2	3			
Time	06:01	07:13	07:30			
Concentration, ppm	5.43	2.91	1.74			
Area, mv-sec	43924	14273	5100			
Calc. Conc., ppm	5.38	2.97	1.72			
% Error	-0.9	2.1	-1.2			
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.	
	1.8936	3.2593	0.9995	2	0.027	

## **CALIBRATION DATA**

Number 2

Client: New Indy Location: Catawba, SC

Project Number: 15730.001.008

Operator: VD

Source: Paper Machine	e Vent 82 M	ethod 16	•	ator: VD ate: 24 Jun 2021
Ambient	Temperature: 72°C	Barometric F	Pressure: 29.60 in.	Hg
Analyte	H <sub>2</sub> S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	461	458	299	233
Ret. Time, sec	25.0	35.0	63.0	132.0
1 Flow = 44.4 mL/Min	<b>10.4</b> ppm	<b>10.3</b> ppm	<b>6.72</b> ppm	<b>5.23</b> ppm
Time: 16:34		Peak Area	ıs, mv-sec	
-	23321	20338	9959	43670
	24380	21799	10647	46630
	25056	22227	10285	45442
Average Area	24252	21454	10297	45247
2 Flow = 77.4 mL/Min	<b>5.96</b> ppm	<b>5.92</b> ppm	<b>3.86</b> ppm	<b>3.01</b> ppm
Time: 16:51		Peak Area	s, mv-sec	
	9796	7866	3569	17108
	9812	7920	3556	17604
	9831	7352	3254	15792
Average Area	9813	7713	3460	16834
3 Flow = 130 mL/Min	<b>3.56</b> ppm	<b>3.53</b> ppm	<b>2.30</b> ppm	<b>1.79</b> ppm
Time: 17:05		Peak Area	s, mv-sec	
	3510	2899	1228	5869
	3467	2681	1272	6176
	3570	2800	1253	6307
Average Area	3516	2793	1251	6117

# **CALIBRATION SUMMARY**

Number 2

Client: New Indy

Project Number: 15730.001.008

Operator: VD

Location: Catawba, SC
Source: Paper Machine Vent 32

Method 16

H₂S	1	2	3			
Time	16:34	16:51	17:05			
Concentration, ppm	10.4	5.96	3.56			
Area, mv-sec	24252	9813	3516			
Calc. Conc., ppm	10.2	6.18	3.49			
% Error	-1.7	3.6	-1.8 ~			
<b>Calibration Curve</b>	Slope	Intercept		Min. Area	Det. Lim.	
	1.8007	2.5680	0.9984	2	0.055	
						*
MeSH	1	2	3			
Time	16:34	16:51	17:05			
Concentration, ppm	10.3	5.92	3.53			
Area, mv-sec	21454	7713	2793			
Calc. Conc., ppm	10.3	5.99	3.51			
% Error	-0.6	1.2	-0.6			
<b>Calibration Curve</b>	Slope	Intercept		Min. Area	Det. Lim.	
	1.9025	2.4083	0.9998	2	0.078	
DMS	1	2	3			
Time	16:34	16:51	17:05			
Concentration, ppm	6.72	3.86	2.30			
Area, mv-sec	10297	3460	1251			*
Calc. Conc., ppm	6.72	3.86	2.30			
% Error	-0.0	0.1	-0.0			
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.	
	1.9679	2.3846	>0.9999	2	0.087	
DMDO						
DMDS	1	2	3			
Time	16:34	16:51	17:05			
Concentration, ppm	5.23	3.01	1.79			
Area, mv-sec	45247	16834	6117			
Calc. Conc., ppm	5.19	3.06	1.78			
% Error	-0.8	1.7	-0.9			
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.	
	1.8669	3.3201	0.9996	2	0.024	

#### ANALYTES AND STANDARDS

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 3 2

Method 16

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Analyte Molecular Weight	<b>H<sub>2</sub>S</b> 34.08	<b>MeSH</b> 48.11	<b>DMS</b> 62.14	<b>DMDS</b> 94.20
Retention Time, sec Peak Detection Window, sec Minimum Peak Area, mv-sec Minimum Peak Height, mv Beginning Peak Width, sec Ending Peak Width, sec	25.0	35.0	63.0	132.0
	10.0	10.0	10.0	10.0
	2	2	2	2
	1	1	1	1
	1.0	1.0	3.0	3.0
	2.0	3.0	5.0	5.0
Permeation Device ID	T-51831	33-50536	89-50725	89-53405
Permeation Rate, ng/min	642 √	901 ✓	758 \( \square \)	895
Permeation Rate, nL/min*	461	458	299	233

Barometric Pressure: 29.60 in. Hg **Ambient Temperature:** 72 °F

No Oxygen Correction

PR<sub>nl</sub> =  $PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^{\circ} + T_a) / T_s] \times (P_s / P_b)$ 

Where:

PR<sub>nl</sub> = Permeation Rate by volume, nL/min = Permeation Rate by weight, ng/min PRna

Vmol = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

= Molecular Weight of compound W<sub>mol</sub>

= Ambient Temperature, °F Ta

Ts = Standard Temperature = 492°R (32 °F)

= Standard Pressure = 29.92 in Hg Ps

 $P_b$ = Barometric Pressure, in Hg

For example, H<sub>2</sub>S:

 $= 642 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.60)$ = 461 nL/min

To calclate concentrations:

C  $= PR_{nl} / F_{d}$ 

Where:

C = Concentration, ppmv

 $PR_{nl}$ = Permeation Rate by volume, nL/min

= Flow rate of diluent, mL/min  $F_d$ 

<sup>\*</sup>Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min. Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

#### INSTRUMENT INFORMATION

Client: New Indy

Location: Catawba, SC Source: Paper Machine Vent 3 2

Method 16

Project Number: 15730.001.008

Operator: VD

Date: 23 Jun 2021

File: E:\6-24-21.trs

Program Version: 2.0, built 15 May 2017

**Computer:** JWS-PROGRAMMING

Trailer: 271

Analog Input Device: Keithley KUSB-3108

GC Channel: 16

File Version: 2.0

Sampling Rate: 0.050 sec.

Data Interval: 0.5 sec.

Gas Chromatograph: GC-8A Serial No. C10494419420SA

**Detector Range: 10** 

	Gases		Temperatu	res, °C	Columns
<u> </u>	Press.	Flow			
	psi	mL/min	Column:	100	Primary: 3'
H <sub>2</sub>	30	50	Detector:	120	Secondary:
Air	30	60			Sample Loop: 6" unlined
Carrier	50	30			

#### **Injection Cycle**

Total Length: 180 sec

Sampling Time: 160 sec

Load/Backflush Time: 85 sec

#### **Default Integration Parameters**

Signal Threshold 0.67 mv Peak detection window ±10 sec Minimum peak area 5 mv-sec Minimum peak height 5 mv above baseline

#### **Dynacalibrator**

Chamber Temperature 130.0°C **Ambient Temperature** 72.0°F Barometric Pressure 29.60 in. Hg

Number 7

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 3/2

Method 16 Calibration 1 Project Number: 15730.001.008 Operator: VD

Time	Ha	S	Me	eSH	D	MS	DN	MDS	TRS		
Tillie	area	ppm	area	ppm	area	ppm	area	ppm	ppm		
				Post tes	st drift						
17:22	13670	7.97	<2	< 0.095	<2	< 0.091	<2	< 0.027	7.97		
17:23	13643	7.96	<2	< 0.095	<2	< 0.091	<2	<0.027	7.96		
17:25	13246	7.84	<2	<0.095	<2	<0.091	<2	<0.027	7.84		
Average		7.92		<0.095		<0.091	. ,	<0.027	7.92		

Number 4

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 2

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Time	0	2	С	O <sub>2</sub>
illie		%	mv	%
	PM ven	t 2 Ru	ın 1	
14:37:42	6760	20.2	-18	0.2
14:37:57	6760	20.2	-18	0.2
14:38:12	6759	20.2	-19	0.2
14:38:27	6762	20.2	-20	0.2
14:38:42	6761	20.2	-19	0.2
14:38:57	6759	20.2	-20	0.2
14:39:12	6760	20.2	-20	0.2
14:39:27	6760	20.2	-19	0.2
14:39:42	6758	20.2	-20	0.2
14:39:57	6761	20.2	-20	0.2
14:40:12	6760	20.2	-19	0.2
14:40:27	6759	20.2	-19	0.2
14:40:42	6759	20.2	-20	0.2
14:40:57	6760	20.2	-20	0.2
Avgs	6760	20.2	-19	0.2

Number 5

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 2

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

	0	2	С	O <sub>2</sub>
Time	mv	%	mv	%
15:28:17	6773	20.2	-35	0.2
	PM Ven	t 2 Ru	ın 2	
15:28:32	6773	20.2	-35	0.2
15:28:47	6774	20.2	-34	0.2
15:29:02	6774	20.2	-35	0.2
15:29:17	6773	20.2	-35	0.2
15:29:32	6775	20.2	-34	0.2
15:29:47	6774	20.2	-35	0.2
15:30:02	6774	20.2	-35	0.2
15:30:17	6774	20.2	-35	0.2
15:30:32	6773	20.2	-35	0.2
15:30:47	6775	20.2	-35	0.2
15:31:02	6774	20.2	-35	0.2
15:31:17	6774	20.2	-35	0.2
15:31:32	6775	20.2	-35	0.2
15:31:47	6775	20.2	-35	0.2
15:32:02	6775	20.2	-35	0.2
15:32:17	6775	20.2	-35	0.2
15:32:32	6775	20.2	-36	0.2
15:32:47	6773	20.2	-36	0.2
15:33:02	6773	20.2	-35	0.2
15:33:17	6775	20.2	-34	0.2
15:33:32	6774	20.2	-35	0.2
15:33:47	6773	20.2	-35	0.2
15:34:02	6774	20.2	-35	0.2
15:34:17	6773	20.2	-32	0.2
15:34:32	6768	20.2	-29	0.2
Avgs	6774	20.2	-35	0.2

Number 6

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 2

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

	0	)2	С	O <sub>2</sub>									
Time	mv	%	mv	%									
	PM vent 2 Run 3												
16:40:11	6779	20.2	-34	0.2									
16:40:26	6778	20.2	-34	0.2									
16:40:41	6778	20.2	-32	0.2									
16:40:56	6776	20.2	-32	0.2									
16:41:11	6777	20.2	-32	0.2									
16:41:26	6778	20.2	-32	0.2									
16:41:41	6777	20.2	-32	0.2									
16:41:56	6777	20.2	-31	0.2									
16:42:11	6777	20.2	-31	0.2									
16:42:26	6778	20.2	-32	0.2									
16:42:41	6778	20.2	-33	0.2									
16:42:56	6779	20.2	-32	0.2									
16:43:11	6778	20.2	-31	0.2									
16:43:26	6780	20.2	-32	0.2									
16:43:41	6778	20.2	-30	0.2									
16:43:56	6777	20.2	-29	0.2									
16:44:11	6777	20.2	-31	0.2									
16:44:26	6777	20.2	-31	0.2									
16:44:41	6777	20.2	-32	0.2									
Avgs	6778	20.2	-32	0.2									

#### CALIBRATION DATA

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 2

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

Start Time: 10:02

 $O_2$ 

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

% Zero 10.1 19.5 Cylinder ID

SG9168283BAL CC454190

Result, mv 13

> 3292 6577

**Curve Coefficients** Intercept

-26

Slope 336.5

Corr. Coeff. 0.9998

CO<sub>2</sub> Method: EPA 3A Calibration Type: Linear Regression

Zero 10.2 🗸 20.4

%

Slope

311.1

Calibration Results Cylinder ID

SG9168283BAL CC454190

Result, mv -68

3027 6279

**Curve Coefficients** Intercept

-90

Corr. Coeff. 0.9999



#### **CALIBRATION ERROR DATA**

Number 1

Client: New Indy Location: Catawba, SC

Source: Paper Machine vent 2

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

Start Time: 10:02

 $O_2$ 

Method: EPA 3A

Span Conc. 19.5 %

**Slope** 336.5

Intercept -25.8

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	13	0.1	0.1	0.5 🗸	Pass
10.1	3292	9.9	-0.2	-1.0 🗸	Pass
19.5	6577	19.6	0.1	0.5	Pass

CO<sub>2</sub>

Method: EPA 3A

Span Conc. 20.4 %

**Slope** 311.1

Intercept -90.1

Standard % Zero 10.2	Response mv -68 3027	<b>Result</b> % 0.1 10.0	<b>Difference</b> % 0.1 -0.2	<b>Error</b> % 0.5 ✓ -1.0 ✓	Status Pass Pass
20.4	6279	20.5	0.1	0.5	Pass



#### **METHODS AND ANALYZERS**

Client: New Indy

Project Number: 15730.001.008

Operator: **VD** 

Location: Catawba, SC Source: Paper Machine vent 2

Date: 24 Jun 2021

File: C:\Users\Trailer 271\Documents\New Indy\6-24-21.cem Program Version: 2.2, built 3 Jul 2020 File Version: 2.04

Computer: DESKTOP-GQ0I9UV Trailer: 271 Analog Input Device: Keithley KUSB-3108

#### Channel 1

**Analyte**  $O_2$ Method EPA 3A, Using Bias CAI 600 SN E07015-M Analyzer Make, Model & Serial No. Full-Scale Output, mv 10000 Analyzer Range, % 20.0 Span Concentration, % 19.5

#### Channel 2

CO<sub>2</sub> Analyte Method EPA 3A, Using Bias CAI 600 SN E07015-M Analyzer Make, Model & Serial No. Full-Scale Output, mv 10000 Analyzer Range, % 25.0 Span Concentration, % 20.4



## APPENDIX D

## VENT 3

New Indy Catawba, SC 15730.001.008 No. 3 Hood Exhaust Paper Machine Vent 3

#### **EMISSION CALCULATIONS**

Date Time Began Time Ended	Run 1 Run 2 Run 3 Mean 6/24/21 6/24/21 937 1042 1145 1037 1142 1245
Volumetric Flow Rate, (Qs), DSCFM BWS % Oxygen Recovery, %	5.45E+04       5.30E+04       5.51E+04       5.42E+04         0.210       0.214       0.196       0.207         20.2       20.2       20.2       20.2         97.2       97.2       97.2       97.2
Total Reduced Sulfur (TRS MW)= 34.08  Concentration, ppm Emission Rate, lb/hr	0.95
H2S (H2S MW)= 34.08  Concentration, ppm Concentration, ppm (Corrected for Recovery) Emission Rate, lb/hr	0.29       0.28       0.31       0.29         0.30       0.29       0.32       0.30         0.09       0.08       0.09       0.09



New Indy Catawba, SC

15730.001.008 No. 3 Hood Exhaust

#### **Paper Machine Vent 3**

	ISOKINETIC CALC	THE ATLANCE			
Run Number	ISORINE HC CALC	1	2	3	Mean
Date		6/24/21 🗸	6/24/21 🗸	6/24/21	
Time Began		937 🗸	1042	1145 🗸	
Time Ended		1029 🗸	1136 🗸	1236	
	INPUT DA				
Sampling Time, min	(Theta)	48.0 🗸	48 🗸	48	48
Stack Diameter, in.	(Dia.)	55.88 🗸	55.88 🗸	55.88	55.88
Barometric Pressure, in. Hg	(Pb)	29.70 🗸	29.70	29.70	29.70
Static Pressure, in. H2O	(Pg)	-1.00 V	-1.00	-1.00	-1.00
Pitot Tube Coefficient	(Cp)	0.84	0.84	0.84	0.84
Meter Correction Factor	(Y)	1.0030 🗸	1.0030	1.0030 🗸	1.0030
Orifice Calibration Value	(Delta H@)	1.8000 🗸	1.8000	1.8000 🗸	1.8000
Nozzle Diameter, in.	(Dn)	0.250 🗸	0.250	0.250	0.250
Meter Volume, ft <sup>3</sup>	(Vm)	30.544 🗸	30.347 🗸	30.732 🗸	30.541
Meter Temperature, °F	(Tm)	76.5 🗸	81.6	87.1	81.7
Meter Temperature, °R	(Tm-R)	536.5	541.6	547.1	541.7
Meter Orifice Pressure, in. H2O	(Delta H)	1.300 🖍	1.300 🗸	1.300 🖊	1.300
Ave Sq Rt Orifice Press, (in. H2O) <sup>1</sup> / <sub>2</sub>	((Delta H)½)avg)	1.140	1.140	1.140	1.140
Volume H2O Collected, mL	(Vlc)	170.0	170.6		164.6
CO2 Concentration, %	(CO2)	0.2	0.2	0.2 🗸	/ 0.2
O2 Concentration, %	(O2)	20.2	20.2	20.2	20.2
Ave Sq Rt Velo Head, (in. H2O)^1/2	((Delta P)½)avg)	1.282	1.254	1.273 🗸	1.270
Stack Temperature, °F	(Ts)	185.0 🗸	186.8	182.1	184.6
Stack Temperature, °R	(Ts-R)	645.0	646.8	642.1	644.6
Moisture Fraction (at Saturation)	(BWS)	0.576	0.599	0.541	0.572
	CALCULATED	DATA			
Nozzle Area, ft <sup>2</sup>	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft <sup>2</sup>	(As)	17.03 🗸	17.03	17.03	17.03
Stack Pressure, in. Hg	(Ps)	29.63	29.63	29.63	29.63
Meter Pressure, in. Hg	(Pm)	29.80	29.80	29.80	29.80
Standard Meter Volume, ft <sup>3</sup>	(Vmstd)	30.013	29.539	29.613	29.721
Standard Water Volume, ft <sup>3</sup>	(Vwstd)	8.002	8.030	7.211	7.748
Moisture Fraction (Measured)	(BWS)	0.210	0.214	0.196	0.207
Moisture Fraction (lower sat/meas)	(BWS)	0.210	0.214	0.196	0.207
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	28.84	28.84	28.84	28.84
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	26.56	26.52	26.72	26.60
Average Stack Gas Velocity, ft/sec	(Vs)	83.37	81.68	82.34	82.46
Stack Gas Flow, actual, ft <sup>3</sup> /min				84121	
Stack Gas Flow, Std , ft <sup>3</sup> /min	(Qa)	85180	83452		84251
Stack Gas Flow, Stu , It /MIN	(Qs)	54489	53016	55059	54188
Calibration check	(Yqa)	1.0150	1.0264	1.0187	1.020
Percent difference from Y					1.70%

# No. 3 Has a Exhaust

Page 1 of 1	K Factor N/A Leak Checks	Initial Fir	Pitot (Sed Gal)	10/4 Des /	MPINGER, SAMPLE TRAIN COMMENTS		64 3		47 3	48 3	49 3		52 3				54				M		Max Temp Max Vac V <sub>m-std</sub> ,		Calculated by Value Calculated		1.008 hine, · CBs eport
	<sub>B</sub> 0			Filter ID Sample ID	FILTER IN	TEMP (°F) T	AN			7	6	40	3	W.	u	1	5	5	2	95	5(	150	Min/Max M	Thermo	Ref. T		
	68 °F 29.70 in Hg	10	17.03 ft2	s 16	FILTER BOX	TEMP (°F)	8/12	246	245	246	246	247	295	299	246	245	244	245	2%	446	247	246	Min/Max 244/249	Fyrite M3A		7	d <sub>y</sub>
	107	24	Stack Area //	Total Traverse Points		) 1) (E)	253	256	255	252	252	251	256	254	252	642	241	250	252	152	152	249	1299/256	by Orsat eck, Pre-ru	Post-run		8
Moisture	Ambient Temp. Baro. Pressure* Static Pressure	Impinger Gain Silica Gel Gain	Stac	Total Trav		(°F) TEMP (°F)	4 76	22	X	75	75	76	76	26	77	77	77	77	78	78	78	78	Son	O <sub>2</sub> /CO <sub>2</sub> Leak Ch			
EPA 4,		78 0		ijĖ		) TEMP (°F)	7	-0	-0	9	0	0	2	10	0		3	9	-	20	10	7		sition	%		
Method: EPA	1.003	elce	Ass	750	ETER STACK	Ď.	181 8	781 6	98/	181	186	38 186	291 185	185	180	186	181	186	186	185		4 184	Avg Ts	Flue Gas Composition Oxygen, %	Carbon Dioxide, % Moisture, %		
Ž	ole ID rr., Y ∆H@	ength Iterial	1	Diam.	DRY, GAS MI READING (	544.900	8-945	.8h5	550.7	552.5	559.4	556.3	558.2	500.2	562.1	564.1	566.0	567.9	569.9	571.9	573.5	575.444	30.544	Flue C	Carb		
	Console ID Meter Corr., Y Console ΔH@	Probe ID/Length Liner Material Pitot ID/Coeff	Thermo ID	Avg. Nozzle Diam.	ORIFICE PRESSURE	(in, H <sub>2</sub> 0)	7.3	1.3					1.3	1.3	1.3	1.3	1.3	1.3	1.3				1.3060 J	Avg VAH			
	New Indy Catawba, SC Hood Exhaust	15730.001.008	170	min.	VELOCITY PRESSURE	(in. H <sub>2</sub> O)	1.8	2.0	20	5.0	1.4	7:1	1.3	1.2	1.7	1.7	6.1	1.8	1.8	1.8	1.5	1.4	Avg VAP	1.4360	nents		
ld Data	Catawba, No. Hood E	15730.0	1/20	18	CLOCK TIME: (plant time)	0937																10:29	at port elevation	72	ces Comments		
tic Fie	ClientSource	W. O. Number Run Number	Date	Sample Time	SAMPLE TIME (min)	0	က	9	6	12	15	18	21	24	27	30	33	36	39	42	45	48	"Barometric Pressure is at port elevation		Integrated Air Services		
<b>Isokinetic Field</b>	Location	W. O. Number Run Number	Test Pe	Samp	TRAVERSE POINT	2	A-1	2	m	4	2	9	7	∞	B-1	2	т	4	c)	9	7	∞	*Barome	WAS A	Integrate		143

		Final	1002	Gard			COMMENTS																		V <sub>m-std</sub> ,			1573 3 Paper TVs & Emissi	30.001.008 Machine, ± #1-2 CBs on Report
Page 1 of 1	Factor N/A	Leak Checks	45.0	6	*	7	SAMPLE. TRAIN	(in Hg)	~	2	N	m	2	3	3	3	2	\$	3	89	3	2	2	3	Vac	Check Q <sub>s</sub> , dscfm % Isokinetic	Calculated by	00	
	X 8		Volume, ft <sup>3</sup>	Pitot	M OI OI	Sample ID		TEMP (°F)	58	57	56	56	56	56	57	57	59	200	63	09	2	49	62	57	Max Temp	Thermocouple (	Ref. Temp, °F	Result	
	D C	20			Filter ID	Odill	FILTER	TEMP (°F)	\$8N/4															7	Min/Max	Th			
	200	3.4 mL	9	17.03 ft2	7		FILTER	TEMP (°F)	239	243	242	243	244	242	244	242	239	142	244	242	241	142	240	243	Min/Max 731/244	-yrite M3A			THE T
		13	Gain 7.		1		· PROBE		250	1251	256	251	251	122	282	252	150	249	253	252	253	254	253	253	244/256	O <sub>2</sub> /CO <sub>2</sub> by Orsat Fyrite Leak Check, Pre-run	Post-run		
Moisture	Ambient Temp. Baro. Pressure*	Impinger Gain	Silica Gel Gain	Stack Area	Total Travores Doint	otal Have		TEMP (°F)	80	80	80	18	18	18	<u>~</u>	81	822	87	87	87	60	83	84	84	Avg Tm 6	O <sub>2</sub> /CO <sub>2</sub> Leak Che			
4							DGM	TEMP (°F)	NIA															7	>	uo			
Method: EPA	1.003	-6.0	20 0 84	623			STACK	( <sub>6</sub> )	186	188	188	188	198	189	189	189	181	183	189	187	185	185	184	179	186-8 186-8	ompositic	oxide, %	%	
Metho	ole ID	ength PACC	sterial 5	4	iams.		DRY GAS METER READING (ft <sup>3</sup> )	576.747	578.7	580.5	582,4	584.2	586.1	588.1	540.0	591.9	593.9	515.8	597.6	599.5	601.3	603.2	605.1	607.094	30.347	Flue Gas Composition Oxygen, %	Carbon Dioxide, %	Moisture, %	
	Console ID  Meter Corr., Y	Probe ID/Length	Liner Material  Pitot ID/Coeff	Thermo ID	Nozzle ID/Diams.	AVY. INDEZIC	ORIFICE PRESSURE AH	(in. H <sub>2</sub> O)	55	1.3	1.3	1.3	1.3	1.3	1.3	1,3	1.3	1, 3	1.3	1.3	1.3	1.3	1.3	1,3	1-350 V	HOV BVA			
	New Indy atawba, SC Hood Exhaust	Gost Thans	15730.001.008	12/21	185		VELOCITY PRESSURE	(in. H <sub>2</sub> O)	ا. ر	000	1.9	1.9	1.7	e 	 	ر ا ا	6.	2.0	2.0	1.1	1.2	1.1	1.3	1.2	1, AVG JAP	1.587	Comments		
ld Data	Catawba,		15730.	60	854	X	CLOCK TIME (plant time)	10:42																14:36	*Barometric Pressure is at port elevation	74		rices	
tic Fie	Client Location/Plant Source	ocation	W. O. Number	Date	est Personnel		SAMPLE TIME (min)	0	3	9	o	12	15	18	21	24	27	30	33	36	39	42	45	48	tric Pressure is		SOUTHON	Integrated Air Services	
<b>Isokinetic Field</b>	Locatic	Sample Location	W. O. W		Test Personnel	Campo	SSE T	, ON	A-1	2	က	4	5	g	7	80	B-1	2	3	4	2	9	7	80	*Barome	NEW!		Integrate	144

	Final	3000	COMMENTS																	V <sub>m-std</sub> ,		87	Paper TVs.& Emissio	0,001,008 Machine, #1-2 CBs on Report
Page 1 of 1	Factor M/A Leak Checks Initial 13 1002	- N	AMPLE TRAIN ACUUM (in Hg)	8	7	2	Ç	4	6	ce	6	ex	4	8	4	4	18	4	2	3×vac	Check Qs, dscfm	Calculated by	00	
	K Factor K F		IMPINGER EXIT ) TEMP (°F)	99	56	24	23	54	22	52	24	57	54	24	52	56	57	57	10	Max Temp	Thermocouple C	Ref. Temp, °F	Result	
	Hg O <sub>2</sub>	Filter	FILTER EXIT TEMP (°F)	AIN															>	Min/Max				
	Fire in B	12.32 ft <sup>2</sup> nts 16	TE F	209	243	247	246	247	544	24.3	442	245	245	842	245	249	242	445	544	Min/Max 209/24	Fyrite M3A		1	4
	の国に	Poir	PROBE TEMP (°F)	250	544	250	544	253	252	152	121	249	152	252	254	254	250	252	452	Min/Max	O <sub>2</sub> /CO <sub>2</sub> by Orsat Fi	Post-run		
oisture	Ambient Temp. Baro. Pressure* 23 Static Pressure 7 Impinger Gain 14	Stack Area	DGM OUTET TEMP (°F)	85	85	85	85	96	73	86	87	88						68	90	AV97.1	O <sub>2</sub> /CO <sub>2</sub>	100	THE PARTY OF THE P	
A 4, Mc		ië.	DGM INLET TEMP (°F)	N/A															7	PVA V	c			
Method: EPA 4, Moisture	023 003 800 5. 6. 5.5	2	STACK TEMP: (°F)	180	183	184	183	183	183	183	187	179	183	183	183	183	182	183	1771	Avg Ts. 1	ompositio	oxide, %	%	
Meth	1 2	7507	DRY GAS METER READING (ft')		50	, te	S	٠,	5	ب	3.1	0.0	6:	9.879	3,7	2.5	is	4.4	38.37	Tal Volume	Flue Gas Composition	Carbon Dioxide, %	Moisture, %	
	Console ID Meter Corr., Y Console △H@ Probe ID/Length Liner Material Pitot ID/Coeff.	Thermo ID Nozzle ID/Diams.	DRY F RE,	669.9	611.8	613, te	618.5	67.4	614	621	623	625	626.	628	636,	632.	634.5	636.4	<b>L</b> 38.	3	1			
	Mete Mete Cons Probe I Liner Pitot	Thermo ID Nozzle ID/Diams. Avg. Nozzle Diam.	ORIFICE PRESSURE AH (in. H <sub>2</sub> O)	1.3	1.3	1.3	1.3	1.3	1.3	J. 3	1,3	1.3	1.3	1.3	1.3	1,3	1.3	1.3	1.3	Avg AH	Avg Vah			
	SC khaust 008		VELOCITY PRESSURE Ap (in. H <sub>2</sub> O)	1.6	90	00	4	20	e	e	S	7	7	6	6	00	2	ん		Avg Vap 1	31.1			
ata	New Indy Catawba, SC 3. 3 Hood Exhaust Loc 1 15730.001.008	6/24/21 /62 min.	(en	1	1.	-	1.	1				1.		74	-1		-		36 1.		1.631	Comments		
ield D	No.	BEA	SHEET SHEET					ir.											12:36	*Barometric Pressure is at port elevation	5.AT	SOUTHIONS	ervices	
etic F	Client Location/Plant Source Sample Location W. O. Number Run Number	Date Test Personnel Sample Time	SAMPLE TIME (min)	က	ဖ	თ	12	15	18	21	24	27	30	33	36	39	CP	45	48	netric Pressur	AT THE	湯	Integrated Air Services	
<b>Isokinetic Field Data</b>	Local Sample W. O. Run	Test P Sam	TRAVERSE POINT NO.	A-1	2	ო	4	5	9	7	<sub>∞</sub>	B-1	2	က	4	2	9	7	80	*Baron	EVW	3	Integrat	145

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# Sample Recovery Field Data

Method: EPA 4, Moisture

Location	Client	New Indy Catawba, SC		e No. 2 Hood Exhaust 15730.001.008							
2004.1	THE TANK		ingers 1 2 magai	vurements in <b>grams</b>	V.O. Numbe	r157	30.001.008	8			
		ППР						latti e			
Run No	The source manufactive		Sample Date	6/24/21	Red	overy Date	6/24/	21			
Sample II			Filter IC	NA		Analys	-	BE			
	1	2		mpingers			/				
Contents	A SAME STATE	2	3			Imp.Total		Total			
Final	6536	821.4	642.9				grams				
Initial	726.0	785.5	637.9				875.4				
Gain	127.6	31.9/	5			164.5		1701			
Ir	npinger Color	6			Labled?		13.5	110.0			
	Gel Condition	land				-					
					Sealed?						
Run Nò	. 2	1	Sample Date	6/24/21	Poor	oven. Dete	16.0	1-1			
Sample IE				NA	Nece	overy Date	-	21			
				npingers		Analyst	DEATE	SE_			
	11	2	3	pringers		Imp.Total	Silica Gel	Total			
Contents	Aug State of the second		Milwert e Mese Mil				grams	TOTAL TOTAL			
Final	909.6	668.0	556.8				916.6				
Initial	767.3	649.7	554.0				909.4	1			
Gain	142.3	18.3/	2.8			163.4	7.2	170.6			
Im	pinger Color	ec			Labled?	1					
Silica G	Gel Condition 6	s-cl			Sealed?						
			Made a sure sure								
Run No.	3		Sample Date	6/24/21	Reco	very Date	6/24/2	0.1			
Sample ID			Filter ID	MA		Analyst	1	2			
			Im	pingers		, manyor	Day				
Contents	1	2	3			Imp.Total	Silica Gel	Total			
	880.1	841.3	64-				grams				
Initial	754.1	The second secon	645			•	866.1				
Gain	126	822.2	643.3			-	859.7				
	The State of	19.1	1.//			146.8	6.4	153.2			
	pinger Color	PR			Labled?	1,	And the second				
Silica G	el Condition	2500			Sealed? _	/					
		Che	ck COC for Sample IDs	of Media Blanks							





# Sample and Velocity Traverse Point Data Sheet - Method #15730.001.008 Paper Machine, #3-3 SDTVs, & #1-2 CBs Emission Report

Client		New Indy		Oper	ator	VD / LF
Loaction/Plant		Catawba, SC			Date	15-Jun-21
Source		No. 3 Hood Exhaust	_	W.0. Nu	mber	15730.001.008
Duct Type	V	Circular		Rectangular Duct		Indicate appropriate type
Traverse Type		Particulate Traverse	1	Velocity Traverse		

Distance from far wall to outside of port (in.) = C	56.000
Port Depth (in.) = D	0.125
Depth of Duct, diameter (in.) = C-D	55.875
Area of Duct (ft <sup>2</sup> )	17.03
Total Traverse Points	16
Total Traverse Points per Port	8

Rectangular Ducts Only	
Width of Duct, rectangular duct only (in.)	
Total Ports (rectangular duct only)	

Traverse Point Locations  Distance from														
Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)											
1	3.2	2	2											
2	10.5	6	6											
3	19.4	11	11											
4	32.3	18	18											
5	67.7	38	38											
6	80.6	45	45											
7	89.5	50	50											
8	96.8	54	54											
9														
10														
11														
12														

Equivalent Diameter = (2\*L\*W)/(L+W)

				Trave	rse Poi	nt Lo	cation F	ercer	nt of Sta	ick -C	ircular		
						Numb	er of Tra	verse	Points				
	Γ	1	2	3	4	5	6	7	8	9	10	-11	12
	1		14.6		6.7		4.4		3.2		2.6		2.1
	2	1314	85.4	1883	25		14.6		10.5	in.	8.2		6.7
	3				75		29.6		19.4		14.6		11.8
	4	9 194	157	The same	93.3		70.4	ALC: N	32.3	TO A	22.6		17.7
	5						85.4		67.7		34.2		25
	6	A di				100	95.6	TKIL	80.6	done	65.8		35.6
	7								89.5		77.4		64.4
	8	1418	1975	13513	SPIE	1/2/3/1	7.19	100	96.8	No. 4	85.4		75
	9										91.8		82.3
	10	TA MINI	10124		1	TANK!	201	Jynn.		Kinzi	97.4	- North	88.2
	11												93.3
ľ	12		100			316	1000		1 33 1	16.3			97.9

Port Diam. (in) =	4
Number of Ports =	2

Flow Disturbances	
Upstream - A (ft)	7.000
Downstream - B (ft)	25.0
Upstream - A (duct diameters)	1.50
Downstream - B (duct diameters)	5.37

Diagram of Stack

Duct Diameters Upstream from Flow Disturbance\* (Distance A)

0.5

1.0

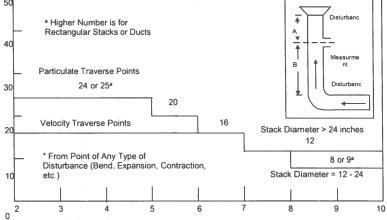
1.5

2.0

2.5

40

Pligher Number is for Rectangular Stacks or Ducts



Duct Diameters Downstream from Flow Disturbance\* (Distance B)

			Tr	averse	Point	Locati	on Pe	cent o	f Stacl	k -Rec	angul	ar	
						Numbe	er of Tra	verse	Points				
		1	2	3	4	5	6	7	8	9	10	11	12
	1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
	2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
	3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
	4	THE R	A FIGE	A TRAIN	87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
°	5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
a	6	74.5.951		· plant	215	300	91.7	78.6	68.8	61.1	55.0	50.0	45.8
t	7							92.9	81.3	72.2	65.0	59.1	54.2
Î	8		301	324	1322	MER			93.8	83.3	75.0	68.2	62.5
0	9									94.4	85.0	77.3	70.8
	10		1000		No.	7			1841	1888	95.0	86.4	79.2
	11											95.5	87.5
	12		Wells	24.84	100	100		THE REAL PROPERTY.	130	1000	122	15.00	95.8

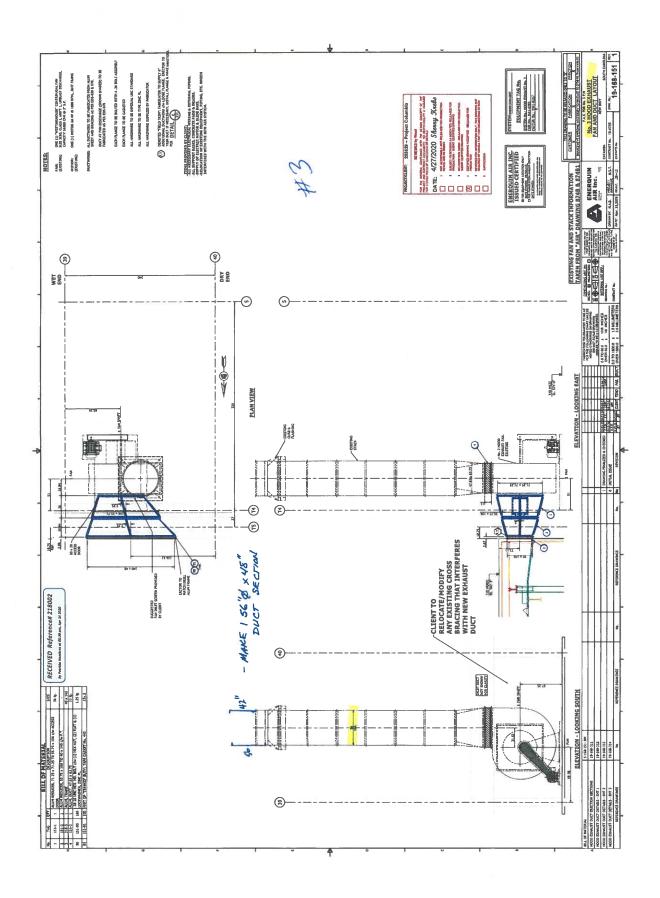
Stack Points & Matrix 9 - 3 x 3 12 - 4 x 3 16 - 4 x 4 20 - 5 x 4 25 - 5 x 5 30 - 6 x 5 36 - 6 x 6 42 - 7 x 6 49 - 7 x 7

Rectangular

Tape Measure I.D. #







#### **RUN SUMMARY**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 3

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 24 Jun 2021

Start Time 09:37

**End Time** 10:37

Average Measured TRS Conc. Recovery No. 2 TRS Corrected for Recovery 0.93 0.79 ppm 97.2 % 0.81 ppm

NB 9129



#### **RUN SUMMARY**

Number 2

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 3

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

Start Time 10:42

**End Time 11:42** 

Average Measured TRS Conc. Recovery No. 2 TRS Corrected for Recovery 0.67 ppm 97.2 % 0.69 ppm

0.84

4129n



#### **RUN SUMMARY**

Number 3

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 3

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 24 Jun 2021

Start Time 11:45

**End Time 12:45** 

Average Measured TRS Conc. Recovery No. 2

Recovery No. 2
TRS Corrected for Recovery

0.71 ppm 97.2 % 0.73 ppm

9.80

\$13a



Number 1

			TRS	mad	0.70	0.49	0.92	0.43	0.68	0.93	1.06	1.12	0.85	0.83	1.31	1.34	0.78	0.70	1.37	1.26	0.94	0.74	0.81	1.12	0.92
.008		21		v	0.027	0.027	0.027	0.027										0.027	0.027	0.027				0.027	:
15730.001.008	ΔV	24 Jun 2021	DMDS	mdd					90.0	0.19	0.14	0.15	0.21	0.13	0.26	0.26	0.23				0.15	0.11	0.15		
lumber:	Operator:	Date:		area	<b>2</b>	7	<b>%</b>	<b>%</b>	10	75	46	47	91	38	143	143	109	<b>~</b>	<b>~</b>	<2	52	56	47	<b>~</b>	
Project Number:	ō			v	0.091	0.091	0.091	0.091	0.091	0.091		0.091	0.091	0.091	0.091			0.091		0.091	0.091			_	
			DMS	mdd							0.27					0.34	0.15		0.62			0.23	0.24	0.65	
	10	1		area	<b>~</b>	2	<b>%</b>	<b>%</b>	<b>~</b>	<b>%</b>	17	<b>%</b>	<2	<b>~</b>	<b>~</b>	27	9	<2	87	<2	<2	13	13	96	
	Method: 16	Calibration: 1		v	0.095	0.095		0.095	0.095			0.095	0.095				0.095								
	Σ	Ca	MeSH	mdd			0.37			0.32	0.22			0.40	0.29	0.19		0.15	0.37	0.42	0.39	0.22	0.21	0.24	
				area	<2	<b>~</b>	30	<2	<2	22	7	<2	<b>~</b>	34	18	∞	<b>~</b>	2	30	38	33	10	10	13	
					0.46	0.25	0.40	0.19	0.37	0.15	0.28	0.64	0.26	0.08	0.41	0.29	0.08	0.40	0.32	0.70	0.16	0.08	0.08	0.17	0.29
		ent 3	S	V										0.076			0.076					0.076	0.076		
>	ı, SC	Paper Machine Vent 3	H <sub>2</sub> S	ppm	0.46	0.25	0.40	0.19	0.37	0.15	0.28	0.64	0.26		0.41	0.29		0.40	0.32	0.70	0.16			0.17	
New Indy	Catawba, SC	Paper M		area	61	19	47	<del></del>	40	7	23	113	20	<b>~</b>	49	24	7	46	31	133	∞	7	<b>~</b>	6	
Client:	Location:	Source:		Time	09:37	09:40	09:43	09:46	09:49	09:52	09:55	09:58	10:01	10:04	10:01	10:10	10:13	10:16	10:19	10:22	10:25	10:28	10:31	10:34	Averages

Number 2

			TRS	maa	0.91	1.08	0.50	0.50	0.49	1.06	1.04	0.32	1.04	0.32	1.13	69.0	0.58	0.79	1.20	0.51	1.19	0.74	1.68	0.54	0.82
1.008		021		V	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027		0.027	
15730.001.008	VD	24 Jun 2021	DMDS	mdd																			0.14		
Project Number:	Operator:	Date:		area	\$ \$	\$	\$	<2	<b>~</b>	<b>~</b>	<b>~</b>	<2	<b>4</b>	<b>~</b>	7	7	<b>%</b>	<b>%</b>	<b>~</b>	\$	<b>%</b>	\$	41	\$	
Project I	O			V	0.091	0.091		0.091	0.091			0.091		0.091	0.091		0.091	0.091		0.091					
			DMS	mdd			0.15			0.20	0.31		0.38			0.41			0.50		0.67	0.23	0.62	0.18	
	ဟ	1		area	%	<2	2	<b>%</b>	7	10	22	<b>~</b>	33	<b>%</b>	<b>2</b>	38	<b>~</b>	<b>~</b>	22	<b>~</b>	102	12	88	80	
	Method: 16	Calibration:		v			0.095	0.095	0.095			0.095		0.095		0.095								0.095	
	2	Ö	MeSH	mdd	0.34	0.54				0.26	0.46		0.41		0.28		0.17	0.33	0.21	0.29	0.26	0.18	0.43		
				area	25	63	<2	<b>~</b>	?	15	46	<b>%</b>	36	<b>~</b>	17	<b>%</b>	9	24	10	19	15	7	40	<2	
					0.43	0.39	0.20	0.26	0.25	0.54	0.21	0.08	0.20	0.08	0.71	0.13	0.27	0.32	0.44	0.08	0.20	0.27	0.36	0.21	0.28
		ent 3	S)	<b>v</b>								9.00		0.076						0.076					
>	a, SC	Paper Machine Vent 3	H <sub>2</sub> S	ppm	0.43	0.39	0.20	0.26	0.25	0.54	0.21		0.20		0.71	0.13	0.27	0.32	0.44		0.20	0.27	0.36	0.21	
New Indy	Catawba, SC	Paper M		area	52	4	12	21	9	81	14	<b>%</b>	13	7	139	9	22	30	22	7	12	22	37	14	
Client:	Location:	Source:		Time	10:42	10:45	08:38	10:51	10:54	10:57	11:00	11:03	11:06	11:09	11:12	11:15	11:18	11:21	11:24	11:27	11:30	11:33	11:36	11:39	Averages

Number 3

			TRS	maa	0.71	1.03	0.62	0.52	0.50	0.92	0.99	1.19	0.87	0.99	0.64	0.44	0.38	0.87	1.05	96.0	0.80	1.19	1.36	0.91	0.85
1.008		121		V			0.027	0.027	0.027	0.027	0.027		0.027	0.027	0.027	0.027	0.027			0.027	0.027	0.027		0.027	
15730.001.008	ΛD	24 Jun 2021	DMDS	maa	0.08	0.17						0.22						0.22	0.15				0.17		
Project Number:	Operator:	Date:		area	16	29	<b>~</b>	<b>~</b>	\$	\$	<b>~</b>	101	<2	<2	7	<b>~</b>	<b>~</b>	106	47	7	7	7	61	<b>~</b>	
Project I	0			V				0.091	0.091	0.091	0.091		0.091		0.091	0.091	0.091	0.091		0.091	0.091			0.091	
			DMS	mdd	0.30	0.30	0.18					0.17		0.32					0.41			0.40	0.48		
	9	-		area	20	20	œ	7	<b>~</b>	<b>%</b>	7	7	7	23	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	38	<b>~</b>	7	37	52	<2	
	Method: 16	Calibration:		V			0.095	0.095		0.095				0.095		0.095	0.095	0.095	0.095				0.095		
		O	MeSH	mdd	0.18	0.31			0.22		0.42	0.21	0.30		0.26					0.51	0.35	0.41		0.40	
				area	7	21	<b>~</b>	<b>~</b>	10	<2	37	10	20	<b>~</b>	4	7	<b>%</b>	<b>~</b>	<b>~</b>	26	27	37	<b>~</b>	35	
					0.08	0.08	0.29	0.28	0.14	0.68	0.43	0.38	0.43	0.52	0.24	0.20	0.14	0.24	0.26	0.31	0.30	0.32	0.45	0.36	0.31
		/ent 3	H <sub>2</sub> S	v	0.076	0.076																			
dy	a, SC	Paper Machine Vent 3	I	ppm			0.29	0.28	0.14	0.68	0.43	0.38	0.43	0.52	0.24	0.20	0.14	0.24	0.26	0.31	0.30	0.32	0.45	0.36	
New Indy	Catawba, SC	Paper N		area	<b>%</b>	?	25	24	9	128	23	42	25	27	9	12	ၑ	18	20	29	27	30	29	38	
Client:	Location:	Source:		Time	11:45	11:48	11:51	11:54	11:57	12:00	12:03	12:06	12:09	12:12	12:15	12:18	12:21	12:24	12:27	12:30	12:33	12:36	12:39	12:42	Averages

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 3

Method 16 Calibration 1 Project Number: **15730.001.008**Operator: **VD** 

Time	l area	վ₂Տ ppm	Mo area	eSH ppm	D area	MS ppm	DI area	MDS ppm	TRS ppm
09:37	61	0.46	<2	<0.095	<2	<0.091	<2	<0.027	0.46
09:40	19	0.25	<2	< 0.095	<2	<0.091	<2	< 0.027	0.25
09:43	47	0.40	30	0.37	<2	< 0.091	<2	< 0.027	0.78
09:46	11	0.19	<2	<0.095	<2	<0.091	<2	<0.027	0.19
09:49	40	0.37	<2	< 0.095	<2	<0.091	10	0.06	0.50
09:52	7	0.15	22	0.32	<2	< 0.091	75	0.19	0.84
09:55	23	0.28	11	0.22	17	0.27	46	0.14	1.06
09:58	113	0.64	<2	< 0.095	<2	< 0.091	47	0.15	0.93
10:01	20	0.26	<2	< 0.095	<2	< 0.091	91	0.21	0.67
10:04	<2	< 0.076	34	0.40	<2	< 0.091	38	0.13	0.66
10:07	49	0.41	18	0.29	<2	< 0.091	143	0.26	1.22
10:10	24	0.29	8	0.19	27	0.34	143	0.26	1.34
10:13	<2	< 0.076	<2	< 0.095	6	0.15	109	0.23	0.61
10:16	46	0.40	5	0.15	<2	< 0.091	<2	< 0.027	0.55
10:19	31	0.32	30	0.37	87	0.62	<2	<0.027	1.31
10:22	133	0.70	38	0.42	<2	< 0.091	<2	< 0.027	1.11
10:25	8	0.16	33	0.39	<2	< 0.091	52	0.15	0.85
10:28	<2	< 0.076	10	0.22	13	0.23	26	0.11	0.66
10:31	<2	<0.076	10	0.21	13	0.24	47	0.15	0.73
10:34	9	0.17	13	0.24	96	0.65	<2	<0.027	1.06
Average		0.27		0.19		0.13		0.10	0.79

Number 2

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 3

Method 16 Calibration 1 Project Number: 15730.001.008 Operator: VD

Time	h area	I <sub>2</sub> S ppm	Mo area	eSH ppm	D area	MS ppm	DI area	/IDS ppm	TRS ppm
10:42	52	0.43	25	0.34	<2	<0.091	<2	<0.027	0.77
10:45	44	0.39	63	0.54	<2	< 0.091	<2	< 0.027	0.93
10:48	12	0.20	<2	< 0.095	5	0.15	<2	< 0.027	0.35
10:51	21	0.26	<2	< 0.095	<2	< 0.091	<2	<0.027	0.26
10:54	18	0.25	<2	< 0.095	<2	< 0.091	<2	< 0.027	0.25
10:57	81	0.54	15	0.26	10	0.20	<2	<0.027	1.00
11:00	14	0.21	46	0.46	22	0.31	<2	<0.027	0.99
11:03	<2	< 0.076	<2	< 0.095	<2	< 0.091	<2	<0.027	-
11:06	13	0.20	36	0.41	33	0.38	<2	< 0.027	0.99
11:09	<2	< 0.076	<2	< 0.095	<2	< 0.091	<2	<0.027	_
11:12	139	0.71	17	0.28	<2	< 0.091	<2	< 0.027	0.99
11:15	6	0.13	<2	< 0.095	38	0.41	<2	< 0.027	0.54
11:18	22	0.27	6	0.17	<2	< 0.091	<2	< 0.027	0.44
11:21	30	0.32	24	0.33	<2	< 0.091	<2	<0.027	0.65
11:24	55	0.44	10	0.21	57	0.50	<2	< 0.027	1.15
11:27	<2	< 0.076	19	0.29	<2	< 0.091	<2	<0.027	0.29
11:30	12	0.20	15	0.26	102	0.67	<2	< 0.027	1.14
11:33	22	0.27	7	0.18	12	0.23	<2	< 0.027	0.69
11:36	37	0.36	40	0.43	88	0.62	41	0.14	1.68
11:39	14	0.21	<2	<0.095	8	0.18	<2	<0.027	0.39
Average		0.27		0.21		0.18		<0.027	0.67

Number 3

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 3

Method 16 Calibration 1 Project Number: **15730.001.008**Operator: **VD**Date: **24 Jun 2021** 

				CII		140	P. 1	400	TDO
Time	area	l₂S ppm	area	eSH ppm	area	MS ppm	area	/IDS ppm	TRS ppm
11:45	<2	<0.076	7	0.18	20	0.30	16	0.08	0.64
11:48	<2	< 0.076	21	0.31	20	0.30	67	0.17	0.96
11:51	25	0.29	<2	< 0.095	8	0.18	<2	< 0.027	0.47
11:54	24	0.28	<2	< 0.095	<2	< 0.091	<2	<0.027	0.28
11:57	6	0.14	10	0.22	<2	< 0.091	<2	< 0.027	0.36
12:00	128	0.68	<2	< 0.095	<2	< 0.091	<2	< 0.027	0.68
12:03	53	0.43	37	0.42	<2	< 0.091	<2	< 0.027	0.85
12:06	42	0.38	10	0.21	7	0.17	101	0.22	1.19
12:09	52	0.43	20	0.30	<2	< 0.091	<2	< 0.027	0.73
12:12	77	0.52	<2	< 0.095	23	0.32	<2	< 0.027	0.84
12:15	18	0.24	14	0.26	<2	< 0.091	<2	< 0.027	0.50
12:18	12	0.20	<2	< 0.095	<2	< 0.091	<2	< 0.027	0.20
12:21	6	0.14	<2	< 0.095	<2	< 0.091	<2	< 0.027	0.14
12:24	18	0.24	<2	< 0.095	<2	< 0.091	106	0.22	0.69
12:27	20	0.26	<2	< 0.095	38	0.41	47	0.15	0.96
12:30	29	0.31	56	0.51	<2	< 0.091	<2	< 0.027	0.82
12:33	27	0.30	27	0.35	<2	< 0.091	<2	< 0.027	0.66
12:36	30	0.32	37	0.41	37	0.40	<2	< 0.027	1.13
12:39	59	0.45	<2	<0.095	52	0.48	61	0.17	1.27
12:42	38	0.36	35	0.40	<2	<0.091	<2	<0.027	0.77
Average		0.30		0.18		0.13		0.05	0.71

#### **RECOVERY DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 3

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 24 Jun 2021

Before Run 1

Start Time 07:42

**End Time** 07:59

Recovery Gas to Probe, Time 07:42

Peak Areas, mv-sec

12673

11981

12277

Average

ppm

12311 7.54

Recovery Gas to GC, Time 07:54

Peak Areas, mv-sec

13351

13392

13952

Average

ppm

13565

7.94

Recovery 95.0%

126



#### **RECOVERY DATA**

Number 2

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 3

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 24 Jun 2021

After Run 3 Before Run 4

Start Time 12:45

**End Time** 12:55

Recovery Gas to Probe, Time 12:45

Peak Areas, mv-sec

12908

13446

13416

Average

ppm

13257

7.84

Recovery Gas to GC, Time 12:51

Peak Areas, mv-sec

13746

14196

14064

Average 14002 **ppm** 8.07

Recovery 97.2%

120



#### **CALIBRATION DATA**

Number 1

Method 16

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 3

Project Number: 15730.001.008
Operator: VD

Ambient	Temperature: 72°C	Barometric F	Pressure: 29.60 in. He	a
Analyte	H₂S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	461	458	299	233
Ret. Time, sec	25.0	35.0	63.0	132.0
1 Flow = 42.9 mL/Min	<b>10.8</b> ppm	<b>10.7</b> ppm	<b>6.97</b> ppm	<b>5.43</b> ppm
Time: 06:01			as, mv-sec	
	23635	22744	10268	43754
	23397	21865	10275	43943
	23478	22059	10303	44074
Average Area	23503	22223	10282	43924
2 Flow = 80.0 mL/Min	<b>5.77</b> ppm	<b>5.73</b> ppm	<b>3.73</b> ppm	<b>2.91</b> ppm
Time: 07:13		Peak Area	as, mv-sec	
*	8086	7277	3039	14674
	7612	6821	2896	13428
	7977	6961	2956	14718
Average Area	7892	7020	2964	14273
3 Flow = 133 mL/Min	<b>3.46</b> ppm	<b>3.44</b> ppm	<b>2.24</b> ppm	<b>1.74</b> ppm
Time: 07:30		Peak Area	as, mv-sec	
4 4.	2749	2295	1139	5166
	2668	2461	1022	4984
	2689	2285	1136	5151
Average Area	2702	2347	1099	5100





#### **CALIBRATION SUMMARY**

Number 1

Method 16

Client: New Indy

Time

% Error

Concentration, ppm

Calc. Conc., ppm

**Calibration Curve** 

Area, mv-sec

06:01

5.43

43924

5.38

-0.9

Slope

1.8936

07:13

2.91

14273

2.97

2.1

Intercept

3.2593

Location: Catawba, SC
Source: Paper Machine Vent 3

One

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

H₂S	1	2	3			
Time	06:01	07:13	07:30			
Concentration, ppm	10.8	5.77	3.46			
Area, mv-sec	23503	7892	2702			
Calc. Conc., ppm	10.6	5.97	3.40			
% Error	-1.5	3.5	-1.9 ✓			
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.9001	2.4228	0.9986	2	0.076	
MeSH	1	2	3			
Time	06:01	07:13	07:30			
Concentration, ppm	10.7	5.73	3.44			
Area, mv-sec	22223	7020	2347			
Calc. Conc., ppm	10.6	5.89	3.38			
% Error	-1.3	2.9	-1.5 ✓			
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.9758	2.3243	0.9991	2	0.095	
DMS	1	2	3			
Time	06:01	07:13	07:30			
Concentration, ppm	6.97	3.73	2.24			
Area, mv-sec	10282	2964	1099			
Calc. Conc., ppm	6.98	3.72	2.25			
% Error	0.2	-0.5	0.3 🗸			
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	198
	1.9707	2.3484	>0.9999	2	0.091	
DMDS	1	2	3			
DMDS	1	2	3			

07:30

1.74

5100

1.72 -1.2 ✓

Corr. Coeff.

0.9995



Det. Lim.

0.027

Min. Area

2



#### **CALIBRATION DATA**

Number 2

Client: New Indy

Location: Catawba, SC
Source: Paper Machine Vent 3

Method 16

Project Number: 15730.001.008

Operator: **VD** 

	Temperature: 72°C	Barometric I	Pressure: 29.60 in.	Hg
Analyte	H₂S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	461	458	299	233
Ret. Time, sec	25.0	35.0	63.0	132.0
1 Flow = 44.4 mL/Min	<b>10.4</b> ppm	<b>10.3</b> ppm	<b>6.72</b> ppm	<b>5.23</b> ppm
Time: 16:34			as, mv-sec	
	23321	20338	9959	43670
	24380	21799	10647	46630
	25056	22227	10285	45442
Average Area	24252	21454	10297	45247
2 Flow = <b>77.4</b> mL/Min	<b>5.96</b> ppm	<b>5.92</b> ppm	<b>3.86</b> ppm	<b>3.01</b> ppm
Time: 16:51		Peak Area	ıs, mv-sec	
	9796	7866	3569	17108
	9812	7920	3556	17604
	9831	7352	3254	15792
Average Area	9813	7713	3460	16834
3 Flow = 130 mL/Min	<b>3.56</b> ppm	<b>3.53</b> ppm	<b>2.30</b> ppm	<b>1.79</b> ppm
Time: 17:05		Peak Area	ıs, mv-sec	
	3510	2899	1228	5869
	3467	2681	1272	6176
	3570	2800	1253	6307
Average Area	3516	2793	1251	6117





#### **CALIBRATION SUMMARY**

Number 2

Client: New Indy

Location: Catawba, SC Source: Paper Machine Vent 3 Project Number: 15730.001.008

Operator: **VD** 

Method 16

Date: 24 Jun 2021

H₂S         1         2         3           Time         16:34         16:51         17:05           Concentration, ppm         10.4         5.96         3.56           Area, mv-sec         24252         9813         3516           Calc. Conc., ppm         10.2         6.18         3.49           % Error         -1.7         3.6         -1.8           Calibration Curve         Slope         Intercept         Corr. Coeff.         Min. Area         Det. Lin	
Concentration, ppm       10.4       5.96       3.56         Area, mv-sec       24252       9813       3516         Calc. Conc., ppm       10.2       6.18       3.49         % Error       -1.7       3.6       -1.8	15
Area, mv-sec       24252       9813       3516         Calc. Conc., ppm       10.2       6.18       3.49         % Error       -1.7       3.6       -1.8	
Calc. Conc., ppm       10.2       6.18       3.49         % Error       -1.7       3.6       -1.8	
<b>% Error</b> -1.7 3.6 -1.8 ✓	
Calibration Curve Slope Intercept Corr Coeff Min Area Det Lin	
	า.
1.8007 2.5680 0.9984 2 0.055	
MeSH 1 2 3	*
Time 16:34 16:51 17:05	
Concentration, ppm 10.3 5.92 3.53	
Area, mv-sec 21454 7713 2793	
Calc. Conc., ppm 10.3 5.99 3.51	
% Error -0.6 1.2 -0.6	
Calibration Curve Slope Intercept Corr. Coeff. Min. Area Det. Lin	1.
1.9025 2.4083 0.9998 2 0.078	,
DMS 1 2 3	
Time 16:34 16:51 17:05	
Concentration, ppm 6.72 3.86 2.30	
<b>Area, mv-sec</b> 10297 3460 1251	91
<b>Calc. Conc., ppm</b> 6.72 3.86 2.30	
<b>% Error</b> -0.0 0.1 -0.0 /	
Calibration Curve Slope Intercept Corr. Coeff. Min. Area Det. Lin	1.
1.9679 2.3846 >0.9999 2 0.087	
DMDS 1 2 3	
Time 16:34 16:51 17:05	
Concentration, ppm 5.23 3.01 1.79	
<b>Area, mv-sec</b> 45247 16834 6117	
<b>Calc. Conc., ppm</b> 5.19 3.06 1.78 -	
<b>% Error</b> -0.8 1.7 -0.9	
Calibration Curve Slope Intercept Corr. Coeff. Min. Area Det. Lim	۱.
1.8669 3.3201 0.9996 2 0.024	2

124



#### **ANALYTES AND STANDARDS**

Client: New Indy

New IIIuy

Location: Catawba, SC

Source: Paper Machine Vent 3

Method 16

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

<b>H₂S</b> 34.08	<b>MeSH</b> 48.11	<b>DMS</b> 62.14	<b>DMDS</b> 94.20
25.0	35.0	63.0	132.0
10.0	10.0	10.0	10.0
2	2	2	2
1	1	1	1
1.0	1.0	3.0	3.0
2.0	3.0	5.0	5.0
T-51831 642 461	33-50536 901 458	89-50725 758	89-53405 895 233
	34.08 25.0 10.0 2 1 1.0 2.0 T-51831 642	34.08 48.11 25.0 35.0 10.0 10.0 2 2 1 1 1 1.0 1.0 2.0 3.0  T-51831 33-50536 642 901	34.08     48.11     62.14       25.0     35.0     63.0       10.0     10.0     10.0       2     2     2       1     1     1       1.0     1.0     3.0       2.0     3.0     5.0       T-51831     33-50536     89-50725       642     901     758

Barometric Pressure: 29.60 in. Hg Ambient Temperature: 72 °F

No Oxygen Correction

 $PR_{nl} = PR_{ng} x (V_{mol} / W_{mol}) x [(460^{\circ} + T_a) / T_s] x (P_s / P_b)$ 

Where:

PR<sub>nl</sub> = Permeation Rate by volume, nL/minPR<sub>ng</sub> = Permeation Rate by weight, ng/min

V<sub>mol</sub> = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

**W**<sub>mol</sub> = Molecular Weight of compound

T<sub>a</sub> = Ambient Temperature, °F

T<sub>s</sub> = Standard Temperature = 492°R (32 °F)

Ps = Standard Pressure = 29.92 in Hg

P<sub>b</sub> = Barometric Pressure, in Hg

For example, H<sub>2</sub>S:

PR<sub>nl</sub> = 642 x (22.4 / 34.08) x [(460 + 72) / 492] x (29.92 / 29.60) = 461 nL/min

To calclate concentrations:

 $C = PR_{nl} / F_{d}$ 

Where:

**C** = Concentration, ppmv

PR<sub>nl</sub> = Permeation Rate by volume, nL/min

**F**<sub>d</sub> = Flow rate of diluent, mL/min

<sup>\*</sup>Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min. Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

#### INSTRUMENT INFORMATION

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 3

Method 16

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

File: E:\6-24-21.trs

Program Version: 2.0, built 15 May 2017

**Computer:** JWS-PROGRAMMING

File Version: 2.0

Trailer: 271

Analog Input Device: Keithley KUSB-3108

GC Channel: 16

Sampling Rate: 0.050 sec.

Data Interval: 0.5 sec.

Gas Chromatograph: GC-8A Serial No. C10494419420SA

**Detector Range: 10** 

	Gases		Temperatures, °C	Columns
	Press.	Flow		
	psi	mL/min	Column: 100	Primary: 3'
$H_2$	30	50	Detector: 120	Secondary:
Air	30	60		Sample Loop: 6" unlined
Carrier	50	30		

#### **Injection Cycle**

Total Length: 180 sec

Sampling Time: 160 sec

Load/Backflush Time: 85 sec

#### **Default Integration Parameters**

Signal Threshold 0.67 mv Peak detection window ±10 sec Minimum peak area 5 mv-sec Minimum peak height 5 mv above baseline

#### **Dynacalibrator**

Chamber Temperature 130.0°C **Ambient Temperature** 72.0°F Barometric Pressure 29.60 in. Hg

Number 7

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 3

Method 16 Calibration 1 Project Number: 15730.001.008
Operator: VD

	Time	Ha	2S	Me	eSH	D	MS	DN	/IDS	TRS
		area	ppm	area	ppm	area	ppm	area	ppm	ppm
					Post tes	t drift				
	17:22	13670	7.97	<2	< 0.095	<2	< 0.091	<2	<0.027	7.97
	17:23	13643	7.96	<2	< 0.095	<2	< 0.091	<2	< 0.027	7.96
	17:25	13246	7.84	<2	<0.095	<2	<0.091	<2	<0.027	7.84
Δ	verage		7.92	, , ,	<0.095		<0.091		<0.027	7.92

Number 1

Calibration 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 27

Project Number: 15730.001.008
Operator: VD

Time	0	2	C	O <sub>2</sub>
rime	mv	%	mv	%
	PM ver	ıt 3 Rı	ın 1	
11:07:35	6776	20.2	-35	0.2
11:07:50	6778	20.2	-35	0.2
11:08:05	6777	20.2	-35	0.2
11:08:20	6778	20.2	-36	0.2
11:08:35	6776	20.2	-35	0.2
11:08:50	6777	20.2	-34	0.2
11:09:05	6779	20.2	-35	0.2
11:09:20	6778	20.2	-34	0.2
11:09:35	6778	20.2	-33	0.2
11:09:50	6779	20.2	-33	0.2
11:10:05	6776	20.2	-33	0.2
11:10:20	6780	20.2	-33	0.2
11:10:35	6776	20.2	-33	0.2
11:10:50	6777	20.2	-32	0.2
11:11:05	6780	20.2	-32	0.2
11:11:20	6776	20.2	-33	0.2
Avgs	6778	20.2	-34	0.2

Number 2

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent

Calibration 1

Project Number: **15730.001.008**Operator: **VD** 

	0	2	C	O <sub>2</sub>	
Time	mv	%	mv	%	
	PM 3	Run	2		
11:48:17	6776	20.2	-35	0.2	
11:48:32	6776	20.2	-35	0.2	
11:48:47	6775	20.2	-35	0.2	
11:49:02	6779	20.2	-35	0.2	
11:49:17	6778	20.2	-35	0.2	
11:49:32	6776	20.2	-34	0.2	
11:49:47	6778	20.2	-35	0.2	
11:50:02	6779	20.2	-35	0.2	
11:50:17	6777	20.2	-35	0.2	
11:50:32	6777	20.2	-36	0.2	
11:50:47	6777	20.2	-34	0.2	
11:51:02	6777	20.2	-35	0.2	
11:51:17	6777	20.2	-35	0.2	
11:51:32	6778	20.2	-34	0.2	
11:51:47	6778	20.2	-35	0.2	
11:52:02	6779	20.2	-35	0.2	
11:52:17	6776	20.2	-35	0.2	
11:52:32	6778	20.2	-36	0.2	
11:52:47	6777	20.2	-34	0.2	
11:53:02	6777	20.2	-35	0.2	
11:53:17	6779	20.2	-35	0.2	
11:53:32	6778	20.2	-35	0.2	
11:53:47	6776	20.2	-34	0.2	
Avgs	6777	20.2	-35	0.2	

Number 3

Calibration 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 2

Project Number: **15730.001.008**Operator: **VD** 

	0:	2	С	O <sub>2</sub>	
Time	mv	%	mv	%	
	PM 3	Run	3		
13:11:54	6772	20.2	-32	0.2	
13:12:09	6774	20.2	-31	0.2	
13:12:24	6774	20.2	-32	0.2	
13:12:39	6774	20.2	-33	0.2	
13:12:54	6775	20.2	-34	0.2	
13:13:09	6774	20.2	-31	0.2	
13:13:24	6774	20.2	-32	0.2	
13:13:39	6774	20.2	-34	0.2	
13:13:54	6772	20.2	-33	0.2	
13:14:09	6773	20.2	-33	0.2	
13:14:24	6774	20.2	-33	0.2	
13:14:39	6773	20.2	-33	0.2	
13:14:54	6773	20.2	-33	0.2	
13:15:09	6774	20.2	-33	0.2	
13:15:24	6773	20.2	-34	0.2	
13:15:39	6775	20.2	-34	0.2	
13:15:54	6773	20.2	-35	0.2	
13:16:09	6774	20.2	-35	0.2	
13:16:24	6774	20.2	-35	0.2	
13:16:39	6774	20.2	-34	0.2	
13:16:54	6773	20.2	-35	0.2	
Avgs	6774	20.2	-33	0.2	

## **CALIBRATION DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 2

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

Start Time: 10:02

O<sub>2</sub>

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

% Cylinder ID Result, mv
Zero - 13
10.1 SG9168283BAL 3292
19.5 CC454190 6577

**Curve Coefficients** 

 Slope
 Intercept
 Corr. Coeff.

 336.5
 -26
 0.9998

CO<sub>2</sub>

Method: EPA 3A

Calibration Type: Linear Regression

**Calibration Results** 

% Cylinder ID Result, mv Zero - -68 10.2 / SG9168283BAL 3027 20.4 CC454190 6279

**Curve Coefficients** 

**Slope** Intercept Corr. Coeff. 311.1 -90 0.9999





#### **CALIBRATION ERROR DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 27

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

Start Time: 10:02

 $O_2$ 

Method: EPA 3A

Span Conc. 19.5 %

**Slope** 336.5

Intercept -25.8

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	13	0.1	0.1	0.5	Pass
10.1	3292	9.9	-0.2	-1.0	Pass
19.5	6577	19.6	0.1	0.5	Pass

CO<sub>2</sub>

Method: EPA 3A

Span Conc. 20.4 %

**Slope** 311.1

Intercept -90.1

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	-68	0.1	0.1	0.5	Pass
10.2	3027	10.0	-0.2	-1.0 🗸	Pass
20.4	6279	20.5	0.1	0.5	Pass



#### **METHODS AND ANALYZERS**

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 2

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

File: K:\15730 New Indy\001 Catawba SC\008\Data\CEMS data\6-24-21.cem

Program Version: 2.2, built 3 Jul 2020 File Version: 2.04

Computer: DESKTOP-GQ0I9UV Trailer: 271
Analog Input Device: Keithley KUSB-3108

**Channel 1** 

Analyte O<sub>2</sub>

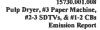
Method EPA 3A, Using Bias Analyzer Make, Model & Serial No. CAI 600 SN E07015-M

Channel 2

Analyte CO<sub>2</sub>

Method EPA 3A, Using Bias Analyzer Make, Model & Serial No. CAI 600 SN E07015-M

Full-Scale Output, mv
Analyzer Range, %
Span Concentration, %
10000
25.0
20.4





### APPENDIX D

### VENT 4

New Indy Catawba, SC 15730.001.008 No. 4 Hood Exhaust Paper Machine Vent 4

#### **EMISSION CALCULATIONS**

			/	
	Run 1	Run 2	Run 3	Mean
Date	6/25/21	6/25/21	6/25/21	
Time Began	1135 / /	1240	1345	
Time Ended	1235	1340	1445	/
	,		/	
Volumetric Flow Rate, (Qs), DSCFM	3.32E+04	3.47E+04	3.31E+04	3.37E+04
BWS	0.269	0.268	0.263	, 0.267
% Oxygen	20.2 🖊	20.2 🖊	20.2	20.2
Recovery, %	98.5	98.5	98.5	98.5
Total Reduced Sulfur (TRS MW)= 34.08		/	/	,
Concentration, ppm	0.69	0.66	0.73	0.69
Emission Rate, lb/hr	0.12	0.12	0.13	0.12
,				
W20 (M20 MW) 24.00		,	/	
<b>H2S</b> $(H2S MW) = 34.08$			/	0.07
Concentration, ppm	0.23	0.20	0.31	0.25
Concentration, ppm (Corrected for Recovery)	0.23	0.20	0.31	0.25
Emission Rate, lb/hr	0.04	0.04	0.06	0.04



New Indy Catawba, SC 15730.001.008 No. 4 Hood Exhaust

#### Paper Machine Vent 4

	ISOKINETIC CALCUL	ATIONS			
Run Number		1	2	3	Mean
Date		6/25/21	6/25/21	6/25/21	
Time Began		1135 ✓	1240	1345	
Time Ended		1227	1334	1437	
	INPUT DATA				
Sampling Time, min	(Theta)	48.0	48	48	48
Stack Diameter, in.	(Dia.)	56.13	56.13	56.13	56.13
Barometric Pressure, in. Hg	(Pb)	29.68 🗸	29.68 🗸	29.68	29.68
Static Pressure, in. H2O	(Pg)	-0.49	-0.49	-0.49	-0.49
Pitot Tube Coefficient	(Cp)	0.84	0.84	0.84	0.84
Meter Correction Factor	(Y)	1.0030	1.0030	1.0030	1.0030
Orifice Calibration Value	(Delta H@)	1.8000	1.8000	1.8000	1.8000
Nozzle Diameter, in.	(Dn)	0.250 🗸	0.250	0.250	0.250
Meter Volume, ft <sup>3</sup>	(Vm)	29.932	30.405 🖊	30.432	30.256
Meter Temperature, °F	(Tm)	84.1 🗸	86.3 🗸	85.2 🗸	85.2
Meter Temperature, °R	(Tm-R)	544.1	546.3	545.2	545.2
Meter Orifice Pressure, in. H2O	(Delta H)	1.300 🏑	1.300	1.300	1.300
Ave Sq Rt Orifice Press, (in. H2O) <sup>\(\frac{1}{2}\)</sup>	((Delta H)½)avg)	1.140 🗸	1.140	1.140	1.140
Volume H2O Collected, mL	(Vlc)	226.5	228.6	223.0	226.0
CO2 Concentration, %	(CO2)	0.2	0.2	0.2	0.2
O2 Concentration, %	(O2)	20.2	20.2	20.2	20.2
Ave Sq Rt Velo Head, (in. H2O) <sup>1</sup> / <sub>2</sub>	((Delta P)½)avg)	0.831 🗸	0.869	0.824	0.841
Stack Temperature, °F	(Ts)	193.1	193.6	194.1 🖊	193.6
Stack Temperature, °R	(Ts-R)	653.1	653.6	654.1	653.6
Moisture Fraction (at Saturation)	(BWS)	0.685	0.693 🗸	0.700	0.693
	CALCULATED DA	ATA			
Nozzle Area, ft <sup>2</sup>	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft <sup>2</sup>	(As)	17.18	17.18	17.18	17.18
Stack Pressure, in. Hg	(Ps)	29.64	29.64	29.64	29.64
Meter Pressure, in. Hg	(Pm)	29.78	29.78	29.78	29.78
Standard Meter Volume, ft <sup>3</sup>	(Vmstd)	28.981	29.321	29.406	29.236
Standard Water Volume, ft <sup>3</sup>	(Vwstd)	10.661	10.760	10.497	10.639
Moisture Fraction (Measured)	(BWS)	0.269	0.268	0.263	0.267
Moisture Fraction (lower sat/meas)	(BWS)	0.269	0.268	0.263	0.267
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	28.84	28.84	28.84	28.84
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	25.92	25.93	25.99	25.95
Average Stack Gas Velocity, ft/sec	(Vs)	54.99	57.54	54.52	55.68
Stack Gas Flow, actual, ft <sup>3</sup> /min		56682	59312	56198	57397
	(Qa)				
Stack Gas Flow, Std, ft <sup>3</sup> /min	(Qs)	33178	34714	33109	33667
	(37 - )	1.0424	1.0202	1.0273	1.033
Calibration check	(Yqa)	1.0434	1.0293	1.02/3	3.02%
Percent difference from Y					3.0470

aBV

Barc. 29.68

Page 1 of 1 K Factor @ Vac., in. Hg Volume, ft<sup>3</sup> Pitot Filter ID Baro. Pressure\* 29,00 Am. Hg 딭 ft<sup>2</sup> 16 Stack Area / 7.18 Silica Gel Gain 7,6 Ambient Temp. 75 Static Pressure - . 49 Total Traverse Points Impinger Gain 218 Method: EPA 4, Moisture \_\_\_\_ 0.84 1.003 .250 .800 A023 4023 Probe ID/Length Pitot ID/Coeff. Thermo ID Console ID Liner Material Meter Corr., Y Console ∆H@ Nozzle ID/Diams. Avg. Nozzle Diam. No. 4 Hood Exhaust 15730.001.008 Catawba, SC m. New Indy **Isokinetic Field Data** neo t Source Date Sample Time Location/Plant Sample Location W. O. Number Run Number Test Personnel Client

Final 000.0 Leak Checks Initial 15,,21 Coco XCZ Sample ID

COMMENTS																		Vm-std:	100
SAMPLETRAIN VACUUM (in Hg)		3	8	8	3	3	3	3	~	3	3	3	3	3	2	3	80	Max Vac	, ,
IMPINGER EXIT TEMP (°F)		63	63	54	50	60	50	50	50	56	51	49	49	49	50	50	21	Max Temp	
FILTER EXIT TEMP (°F)		MA										_	_			/	7	Min/Max	i
FILTER BOX TEMP (°F)		251	252	265	253	250	250	1221	452	255	254	251	255	1251	254	253	1251	Min/Max Min/Max	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~
PROBE TEMP (°F)		243	243	242	843	241	240	142	242	241	142	243	242	242	243	145	242	Min/Max	2000
DGM OUTET TEMP (°F)		87	82	63	2483 243	84	83	64	85	84	86	85	85	85	85	85	82	Avg Tm	
DGM INLET TEMP (°F)		NA				<u></u>											3	Av	
STACK TEMP (°F)		193	193	193	193	193	193	193	161	193	193	193	193	195	195	193	193	Avg Ts /	11711
DRY GAS METER READING (ft)	271.800	823.6	825.4	827.2	829.1	831.0	837.9	834.8	836.7	388.6	840.4	842.3	844.2	646.1	848.0	849.8	851.732	Total Volume	5001
ORIFICE PRESSURE AH (in. H <sub>2</sub> O)		1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3		200
VELOCITY PRESSURE △P (in. H <sub>2</sub> O)		.78	.73	.72	.54	89.	.70	1.67	07.	.77	.79	.70	. 68	67.	.70	99.	.65	Avg VAP	1000
	11.55																12:27		
: TIME	D	3	9	6	12	15	18	21	24	27	30	33	36	39	42	45	48	*Barometric Pressure is at port elevation	
TRAVERSE POINT NO		A-1	2	8	4	2	9	7	80	B-1	2	8	4	5	9	7	80	*Barom	

Moisture, %

15730.001.008 ,#3 Paper Machine, SDTVs, & #1-2 CBs Emission Report

QC by

% Isokinetic Calculated by

Thermocouple Check

O<sub>2</sub>/CO<sub>2</sub> by Orsat Fyrite M3A

Flue Gas Composition

Leak Check, Pre-run

Post-run

0.2

Carbon Dioxide, %

Comments

Integrated Air Services

Oxygen, %

Meter Temp., °F Ref. Temp, °F Result

scf Qs, dscfm

Page 1 of 1	.1.	4/4	Leak Checks	Initial	0.00	1,71	Soch		
Page	7	N Factor NIA	Leal		Volume, ft <sup>3</sup>	@ Vac., in. Hg	Pitot	Filter ID N/A	Sample ID Run 2
Moisture	Ambient Temp. 79 °F	Baro. Pressure* 29.68 in. Hg	Static Pressure 49 in. H <sub>2</sub> O	Impinger Gain 2209 mL	Silica Gel Gain 7,7 g		Stack Area 17.16 ft <sup>2</sup>		
Method: EPA 4, Moisture	Console ID Ac23	Meter Corr., Y 1,003	Console △H@ C.800	Probe ID/Length PREC - C'	Liner Material 95	Pitot ID/Coeff. P77 0.84	Thermo ID Ac23	Nozzle ID/Diams.	Avg. Nozzle Diam. • 250 in. Total Traverse Points 16
Sokinetic Field Data	Client New Indy	.ocation/Plant Catawba, SC	Source No. 4 Hood Exhaust	Sample Location Roof	W. O. Number 15730.001.008	Run Number 2	Date 6/25/21	Test Personnel BEA/BC	Sample Time 48 min. A
ISOKII		Locs		Sampl	W. C	Ru		Test	Sai

5,,000 Final

			8 / To 10 / To
<b>一方25</b> <b>25</b>			COMMENTS
305		340	SAMPLE -TRAIN VACUUM
2	Filter ID N/A	Sample ID Run 2	METER STACK DGM DGM PROBE FILTER FILTER IMPINGER 3 (ft.) TEMP INLET OUTET TEMP (F) TEMP (F)
	Filter	Samp	FILTER EXIT
3		16	FILTER BOX
1 0 00 00 0000		rse Points	PROBE TEMP (°F)
Cago		in. Total Traverse Points 16	DGM OUTET
		in. T	DGM
)		.250	R STACK TEMP
2000	JS.		RY GAS METER READING (ft³)
	Nozzle ID/Diams.	Avg. Nozzle Diam.	ORIFICE D PRESSURE
1 7.		min.	VELOCITY PRESSURE
2167	3EA1BE	48	CLOCK TIME (plant time)
250	Test Personnel 854/	Sample Time	SAMPLE TIME SAMPLE TIME (min)
			A. T.

1		
	COMMENTS	
	SAMPLE TRAIN VACUUM (in Hg)	
	IMPINGER EXIT TEMP (°F)	
THE PERSON NAMED IN	FILTER EXIT TEMP (°F)	7
	FILTER BOX TEMP (°F)	
· College State	PROBE TEMP (°F)	
Annual Control of the last	DGM OUTET TEMP (°F)	,
Section of the second section is	DGM DGM INLET OUTET TEMP (°F) TEMP (°F)	
	STACK TEMP (°F)	
	DRY GAS METER READING (ft')	
The Property and Control of the Cont	ORIFICE PRESSURE △H (in. H₂O)	
Contraction of the Contraction o	VELOCITY PRESSURE Ap (in. H <sub>2</sub> ©)	
	CLOCK TIME (plant time)	
	SAMPLE TIME (min)	
Section of the last of the las	TRAVERSE POINT NO	

	10000							115									Asserted to		ı
COMMENTS																		V <sub>m-std</sub> ,	
SAMPLE ~TRAIN VACUUM	(in Hg)	2	7	8	3	8	8	7	8	2	2	8	X	8	8	2	7	Max Vac	
IMPINGER EXIT	LEMIP ('L')	65	64	19	17	17	19	63	65	77	62	11	17	()	62	63	64	Max Temp	
FILTER EXIT		NIA															+	Min/Max	-
FILTER BOX TEMP (6)		256	255	255	257	152	255	256	252	259	257	258	256	248	125/	251	284	Min/Max 218/25 8	A CAN AL
PROBE TEMP (°F)		293	242	142	242	162	242	242	242	243	622	242	142	243	147	242	242	Min/Max 231/243	
DGM OUTET		98	86	87	98	85	98	86	87	28	87	87	200	98	26	36	87	AVIOTA NO. 7	0010
DGM INLET	LEWIT V	NIA														7.0	7	4	
STACK TEMP		192	193	194	194	194	194	194	193	461	194	461	461	461	194	193	193	Avg Ts	
DRY GAS METER READING (ft³)	881900	853.9	855.8	857.7	859.5	861.4	863.3	865.2	867.1	869.0	876.9	872.7	874.7	874.6	878.5	B80.4	882,305	So.405	The state of the s
ORIFICE PRESSURE AH	(in. H <sub>2</sub> O)	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	6.3	1.3	1.3	1.3	1.3	1.3	1.360 d	1111
VELOCITY PRESSURE	(in. H <sub>2</sub> ©)	.84	.84	.85	.74	.76	HC.	.73	,66	18.	- 68°	.79	.67	12.	.73	,72	.67	\$5573°	-
TIME (plant time)	12:40															200	13:34	it port elevation	
SAMPLE TIME (min)	0	3	9	o	12	15	18	21	24	27	30	33	36	39	42	45	48	*Barometric Pressure is at port elevation	-
TRAVERSE POINT		A-1	2	က	4	5	9	7	∞	B-1	2	ю	4	5	ဖ	7 2	∞	*Barome	



Sc.405 | |43.6 | Flue Gas Composition Oxygen, % Carbon Dioxide, % Moisture, %

86.3 | 231/243 | 248/258 | 02/CO2 by Orsat Fyrite M3A Leak Check, Pre-run Post-run 2.0

Meter Temp., °F Ref. Temp, °F

Result

Palp Dyer, 83 Paper Machine, 12-3 SDTVs, & #1-2 CBs Wission Report

Discourse of the part of the part

scf Qs, dscfm

Thermocouple Check

Data Sheets Version 2. Copyright © 2021 by Weston Solutions, Inc.

		N. W.	al Final		5"					COMMENTS																	
Page 1 of 1	K Factor 1/1	, C	Initial	0.00		6000		Run 3	SAMPLE	VACUUM	(in Hg)	3	3	M	3	3	3	3	3	3	3	3	2	3	3	3	ç
	X			Volume, ft <sup>3</sup>	@ Vac., in. Hg	itot			IMPINGER	EXIT TEMP (°E)		63	62	57	55	55	54	54	59	57	55	55	56	57	58	59	
		<sub>D</sub> C	0,7				Filter ID	Sample ID	FILTER	EXIT	EWIF (F)	N/A													_		
	•	In Hg		6		5 Hz		16	FILTER	BOX TEMP (°F)		256	255	254	254	252	Ph254	253	251	252	253	252	28258	252	252	252	
	1 7	SIIR 44	Sain 217.3	Saing. 7		Stack Area 17.16		se Points	PROBE	TEMP (°F)		243	239	241	240	242	239	240	240	242		241	240	243	240		
oisture	Ambient Temp.	Static Pressure	Impinger Gain	Silica Gel Gain 6.		Stack /		Total Traverse Points	DGM	COUTET TEMP (PE)		38	86	85	85	85	84	48	84	85	86	186	36	18	85		1
Method: EPA 4, Moisture	1	.ט מ	199					in. To	DGM	TEMP (96)		N/A												_			
od: EP		0 0	e.		0.84			2	STACK	TEMP		195	195	175	194	461	461	661	194	461	461	194	401	194	194	161	
Meth	Y	1.00 J	b	erial 55	2	DID 4023		am250	DRY GAS METER	( ul omoveu)	882.557	884.5	686.4	888. 2	890.1	892.0	893.9	875.8	877.7	899.6	901.6	903.5	905.4	907.2	909.1	911.0 2	200
	Console ID	Console AH@	Probe ID/Length	Liner Material	Pitot ID/Coeff.	Thermo ID	Nozzle ID/Diams.	Avg. Nozzle Diam.	ORIFICE	Н∇	(in. H <sub>2</sub> O)	1.3 8	1.3 6	1,3	1.3	1.3	1,3	1.3	1.3	1.3	1.3	1,3	1.3	1.3	1.3 6	1.3	,
	Indy	Ja, SC		01.008		21		min.	VELOCITY	ď∇	(in. H <sub>2</sub> O)	8,	.80	.76	.54	.50	.71	.67	.67	08.	.76	٥٢.	.68	.63	.58	.65	
d Data	New Indy	No 4 Hood Exhaust	Roof	15730.001.008	3	15/	BEAL	48		(plant time)	13:45																- 10
tic Fiel	Client	Source	ocation	W. O. Number	Run Number	Date	Test Personnel	Sample Time	SAMPLE TIME		0	3	9	o	12	15	18	21	24	27	30	33	36	39	42	45	
<b>Isokinetic Field Data</b>		Location	Sample Location	W. O.	Run		Test Pe	Samp	TRAVERSE	POINT CN		A-1	2	က	4	5	9	7	∞	B-1	2	8	4	2	9	7	

Dem readings 412.989 Sample trank 48

V<sub>m-std</sub>,

> 252 259

240 240

85

scf

Qs, dscfm % Isokinetic

Thermocouple Check

O<sub>2</sub>/CO<sub>2</sub> by Orsat Fyrite M3A

36.431 | 194.1

Avg AH . 300

\*Barometric Pressure is at port elevation

48 45

ω

Carbon Dioxide, %

Comments

Integrated Air Services

Oxygen, %

Moisture, %

Leak Check, Pre-run

Post-run

Ref. Temp, °F Result

Meter Temp., °F

## Sample Recovery Field Data

Method: EPA 4, Moisture

	Client	New Indy	100	100	Source		ood Exhau	st
Location	Plant	Catawba, SC		VV.	O. Number	15/3	0.001.008	
		Impii	ngers 1 - 3 measur	ements in grams				
Run No.	1		Sample Date	6/25/21	Reco	very Date	6/251	21
Sample ID	Run 1		Filter ID	NA		Analyst	BA	
		The Carlot of the Sun In	In	pingers			WEIGHT !	Tales, F
	1	2	3			Imp.Total	Silica Gel	Total
Contents	arll s					E 12 14	grams	
	954.7	723.6	555.9				894.5	
Initial	766.9	690.8	557.6				388.9	/
Gain	187.8	32.8	-1.7			218.9	7.67	226.5
lmp	oinger Color(	clear			Labled?	/		
Silica G	el Condition	Copl			Sealed?			
Run No.	2		Sample Date	6/25/21	Reco	very Date	6/25	121
Sample ID	Rm 2		Filter ID				RA	
				npingers				II SII JUNE
	1	2	3			Imp.Total	Silica Gel	Total
Contents							grams	
Final	940.9	839.8	458.5				859.8	
Initial	763.2	802.2	652.9				852.1	
Gain	177.7 /	37.6 /	5.4			220.9	7.7	228.6
lmi	oinger Color (	lear			Labled?	- Igalia		
		pood			Sealed?	The Market		
Oilloa O	er condition _ q	0000			- Octalett:			
Run No.	3		Sample Date	6/25/21	Reco	very Date	6/25/	121
Sample ID		?	Filter ID	1210		Analyst	01	
	7001			npingers				
	1	2	3			Imp.Total	Silica Gel	Total
Contents							grams	
Final	949.0	718.9	553.8				901.0	
Initial	762.9	684.6	556.9				895.3	
Gain	186.1/	34.3 /	-3.1			217.3	5.7	223
	pinger Color (	clear			Labled?	/	Hr.	
	el Condition a	pod			Sealed?	1		
	<del></del>	Ch	eck COC for Sample ID	Os of Media Blanks		MARKET COMMITTEE		



# Sample and Velocity Traverse Point Data Sheet - Method of Party of All Party of All

Client	t	New Indy		Operator		VD / LF
Loaction/Plans	t	Catawba, SC		Date	e	15-Jun-21
Source		No. 4 Hood Exhaust		W.0. Numbe	r1	5730.001.008
Duct Type	7	Circular		Rectangular Duct	Indica	te appropriate type
Traverse Type		Particulate Traverse	7	Velocity Traverse		

Distance from far wall to outside of port (in.) = C	56.250
Port Depth (in.) = D	0.125
Depth of Duct, diameter (in.) = C-D	56.125
Area of Duct (ft <sup>2</sup> )	17.18
Total Traverse Points	16
Total Traverse Points per Port	8

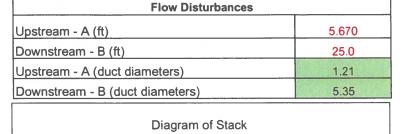
Rectangular Ducts Only	
Width of Duct, rectangular duct only (in.)	
Total Ports (rectangular duct only)	

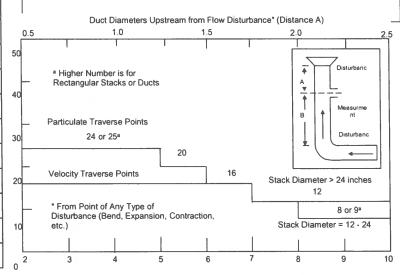
	Tra	verse Point Loc	ations
Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	3.2	2	2
2	10.5	6	6
3	19.4	11	11
4	32.3	18	18 1/2
5	67.7	38	38
6	80.6	45	45 1/2
7	89.5	50	50 1/2
8	96.8	54 1/2	54 1/2
9			
10			
11			
12			

Equivalent Diameter = (2\*L\*W)/(L+W)

			Trave	rse Poi	nt Loc	ation P	ercer	nt of Sta	ck -C	ircular		
	Number of Traverse Points											
	1	2	3	4	5	6	7	8	9	10	11	12
1		14.6		6.7	D. Frank	4.4		3.2		2.6		2.1
2	14298	85.4		25		14.6		10.5	0) = 1	8.2	100	6.7
3				75		29.6		19.4		14.6		11.8
4			in sell	93.3	W.	70.4		32.3	60.6	22.6		17.7
5						85.4		67.7		34.2		25
6		VER	37.19	O'GHO		95.6		80.6		65.8	27/4	35.6
7								89.5		77.4		64.4
8	13.34	123		1100	1	39/3	Hoyse!	96.8	3	85.4		75
9										91.8		82.3
10	10,19	70.2		1000		120/	1		ne	97.4		88.2
11												93.3
12	la T	-2001	N G					al=out	News	an i		97.9

Port Diam. (in) =	4
Number of Ports =	2





Duct Diameters Downstream from Flow Disturbance\* (Distance B)

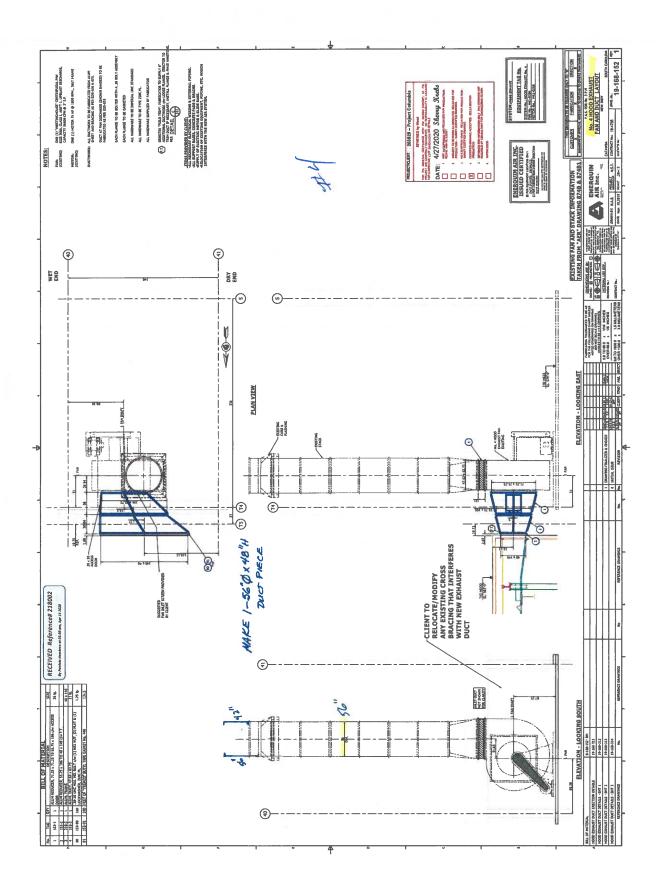
	L		Tr	averse	Point	Locati	on Pe	rcent o	f Stac	k -Rect	angula	ar	
		Number of Traverse Points											
	Γ	1	2	3	4	5	6	7	8	9	10	-11	12
Т	1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
Γ	2	TE I	75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
ľ	3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
	4			100.5	87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
[	5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
4	6	15.0	2.88			2 4	91.7	78.6	68.8	61.1	55.0	50.0	45.8
ı	7							92.9	81.3	72.2	65.0	59.1	54.2
1	8	17,45			1	SE BY	201	118	93.8	83.3	75.0	68.2	62.5
1	9									94.4	85.0	77.3	70.8
T	10	News:	Way h	1		1479.18	91, 98	19840		100	95.0	86.4	79.2
ľ	11											95.5	87.5
T	12	8	1162	are c			1		5710	1		456	95.8

Stack Points & Matrix 9 - 3 x 3 12 - 4 x 3 16 - 4 x 4 20 - 5 x 4 25 - 5 x 5 30 - 6 x 5 36 - 6 x 6 42 - 7 x 6 49 - 7 x 7

Rectangular

Tape Measure I.D. # TM -07

180



Number 4

Client: New Indy

Location: Catawba, SC
Source: Paper Machine Vent

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

Date: 25 Jun 2021

Start Time 11:35

**End Time 12:35** 

**Average Measured TRS Conc.** 

Recovery No. 3

**TRS Corrected for Recovery** 

0.62 0.68 0.56 ppm 98.5 %

0,56 ppm 0.690.69



Number 5

Client: New Indy

Location: Catawba, SC Source: Paper Machine Vent

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

Date: 25 Jun 2021

Start Time 12:40

**End Time 13:40** 

**Average Measured TRS Conc.** 

Recovery No. 3

**TRS Corrected for Recovery** 

055 0.65 0<del>.52</del> ppm 98.5 %

0.53 ppm

0.60 0.66





Number 6

Client: New Indy

Location: Catawba, SC
Source: Paper Machine Vent

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Start Time 13:45

**End Time 14:45** 

**Average Measured TRS Conc.** Recovery No. 3 **TRS Corrected for Recovery** 

0.61 ppm 98.5 % 0.62 ppm 049 0.73



Number 4

Client:	New Indy	λk								Project Number:	Number:	15730.001.008	1.008	
Location:	Catawba, SC	a, SC				2	Method: 16	(0		0	Operator:	ΛD		
Source:	Paper N	Paper Machine Vent 1	/ent 1			Ö	Calibration:	1			Date:	25 Jun 2021	021	
		I	H <sub>2</sub> S			MeSH			DMS			DMDS		TRS
Time	area	ppm	<b>v</b>		area	mdd	v	area	mdd	v	area	mdd	v	maa
	PM Vent 4	4 Run 1						0						0
11:35	25	0.27		0.27	<b>%</b>		0.082	7		0.07	20	0.14		0.70
11:38	<b>~</b>		0.071	0.07	7		0.082	∞	0.15		<b>%</b>		0.024	0.35
11:41	<b>~</b>		0.071	0.07	145	0.77		<b>%</b>		0.07	2		0.024	96.0
11:44	56	0.27		0.27	56	0.31		<b>%</b>		0.07	7		0.024	0.70
11:47	38	0.34		0.34	23	0.30		27	0.28		<b>%</b>		0.024	0.96
11:50	43	0.36		0.36	27	0.32		<b>~</b>		0.07	14	0.07		0.89
11:53	41	0.35		0.35	<2		0.082	28	0.29		<b>~</b>		0.024	0.77
11:56	36	0.33		0.33	4	0.11		<b>2</b>		0.07	<b>%</b>		0.024	0.56
11:59	37	0.33		0.33	<b>~</b>		0.082	27	0.28		49	0.13		0.97
12:02	7		0.071	0.07	7	0.20		13	0.19		7	90.0		0.58
12:05	<2		0.071	0.07	<b>~</b>		0.082	<2		0.02	16	0.07		0.37
12:08	63	0.44		0.44	13	0.22		34	0.32		<b>~</b>		0.024	1.03
12:11	30	0.29		0.29	7	0.16		22	0.42		<2		0.024	0.93
12:14	7		0.071	0.07	<b>~</b>		0.082	<b>~</b>		0.07	<b>~</b>		0.024	0.27
12:17	59	0.29		0.29	18	0.26		<b>~</b>		0.07	7		0.024	0.67
12:20	ζ'		0.071	0.07	7		0.082	<b>~</b>		0.07	7		0.024	0.27
12:23	∞	0.14		0.14	35	0.37		<b>~</b>		0.07	7		0.024	0.63
12:26	14	0.20		0.20	<b>~</b>		0.082	17	0.22		35	0.11		0.73
12:29	<b>~</b>		0.071	0.07	4	0.12		9	0.23		7		0.024	0.47
12:32	28	0.42		0.42	7	0.16		12	0.19		<b>%</b>		0.024	0.81
Averages	45			0.23										0.68

Number 5

Client:	New Indy	ду								Project I	Project Number:	15730.001.008	1.008	
Location:	Catawba, SC	a, SC				<	Method: 16	9		0	Operator:	VD		
Source:	Paper N	Paper Machine Vent 1	Vent 1			Ö	Calibration:	-			Date:	25 Jun 2021	021	
		I	H <sub>2</sub> S			MeSH			DMS			DMDS		TRS
Time	area	ppm	V		area	mdd	v	area	mdd	V	area	maa	V	maa
_	PM vent	4 Run 2	6.						0					c
12:40	ω	0.15		0.15	<b>~</b>		0.082	24	0.27		<b>~</b>		0.024	0.55
12:43	7	0.18		0.18	41	0.40		7		0.07	25	0.09		0.83
12:46	97	0.55		0.55	<b>%</b>		0.082	<2		0.07	<b>~</b>		0.024	0.75
12:49	19	0.23		0.23	7		0.082	<b>%</b>		0.07	<b>~</b>		0.024	0.43
12:52	<b>%</b>		0.071	0.07	<b>~</b>		0.082	51	0.40		<b>~</b>		0.024	0.60
12:55	13	0.19		0.19	<b>~</b>		0.082	8	0.23		<2		0.024	0.55
12:58	<b>~</b>		0.071	0.07	7	0.15		26	0.42		<b>~</b>		0.024	0.69
13:01	7	0.14		0.14	<b>~</b>		0.082	7		0.07	28	0.10		0.49
13:04	<b>~</b>		0.071	0.07	<b>%</b>		0.082	14	0.20		35	0.11		0.58
13:07	89	0.46		0.46	တ	0.18		10	0.17		<b>%</b>		0.024	0.85
13:10	9	0.12		0.12	<b>~</b>		0.082	25	0.27		4	0.07		0.61
13:13	20	0.24		0.24	26	0.31		\$		0.07	<b>~</b>		0.024	0.67
13:16	9	0.16		0.16	35	0.37		61	0.44		17	0.08		1.12
3:19	23	0.26		0.26	<b>%</b>		0.082	7		0.07	7		0.024	0.46
3:22	<b>~</b>		0.071	0.07	7		0.082	12	0.18		23	0.09		0.51
3:25	44	0.37		0.37	45	0.42		2	0.12		7		0.024	0.95
13:28	80	0.50		0.50	%		0.082	<b>~</b>		0.07	<b>~</b>		0.024	0.70
13:31	<b>~</b>		0.071	0.07	%		0.082	27	0.29		<b>~</b>		0.024	0.49
3:34	<b>~</b>		0.071	0.07	14	0.23		<2		0.07	14	0.07		0.50
13:37	\$		0.071	0.07	17	0.25		19	0.17		33	0.11		0.71
Averages				0.20										0.65

Number 6

			TRS	mdd	0.52	0.62	0.57	0.39	0.67	0.99	0.86	0.68	99.0	0.48	0.77	0.78	0.58	0.74	0.82	0.98	0.89	0.58	1.05	0.77	0.72
1.008		221		v		0.024		0.024			0.024		0.024	0.024		0.024	0.024		0.024		0.024	0.024	0.024	0.024	
15730.001.008	ΛD	25 Jun 2021	DMDS	mdd	0.09		90.0		0.11	0.07		0.05			0.07			90.0		0.09					
Jumber:	Operator:	Date:		area	22	<2	7	7	34	14	<2	7	<2	<b>~</b>	16	<b>~</b>	<b>~</b>	12	<b>~</b>	23	<b>~</b>	<b>%</b>	<b>~</b>	<2	
Project Number:	0			<b>v</b>	0.07		0.07	0.07	0.07			0.07		0.07			0.07	0.07	0.07		0.07			0.07	
			DMS	mdd		0.32				0.17	0.46		0.25		0.28	0.30				0.17		0.11	0.55		
		-		area	<b>~</b>	33	<2	<b>~</b>	<2	10	65	<b>?</b>	21	<b>%</b>	26	29	7	<b>~</b>	7	10	<b>%</b>	4	92	<2	
	Method: 16	Calibration: 1		٧	0.082	0.082		0.082	0.082	0.082	0.082		0.082				0.082		0.082			0.082			
	2	ပ	MeSH	mdd			0.22					0.18		0.24	0.22	0.17		0.15		0.22	0.35		0.20	0.36	
				area	<2	< <sub>2</sub>	13	<2	<2	<2	<2	တ	<2	15	14	ω	<b>~</b>	9	<b>%</b>	13	31	<b>~</b>	-	33	
		ent 1		V																					
<u>&gt;</u>	a, SC	Paper Machine Vent 1	H <sub>2</sub> S	mdd	0.19	0.18	0.17	0.19	0.30	0.61	0.28	0.33	0.28	0.12	0.12	0.27	0.38	0.39	0.62	0.41	0.42	0.35	0.26	0.30	0.31
New Indy	Catawba, SC	Paper N		area	13	<del>-</del>	10	13	30	117	56	37	27	Ŋ	2	25	49	51	119	26	29	40	23	30	
Client:	Location:	Source:		Time	13:45	13:48	13:51	13:54	13:57	14:00	14:03	14:06	14:09	14:12	14:15	14:18	14:21	11:31	14:27	14:30	14:33	14:36	14:39	14:42	Averages

Number 4

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 1

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

-									
Time		I <sub>2</sub> S	Me	eSH	D	MS	DN	MDS	TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
				PM Vent 4	Run 1				
11:35	25	0.27	<2	< 0.08	<2	< 0.07	50	0.14	0.55
11:38	<2	< 0.07	<2	<0.08	8	0.15	<2	< 0.02	0.15
11:41	<2	< 0.07	145	0.77	<2	< 0.07	<2	< 0.02	0.77
11:44	26	0.27	26	0.31	<2	< 0.07	<2	< 0.02	0.59
11:47	38	0.34	23	0.30	27	0.28	<2	< 0.02	0.92
11:50	43	0.36	27	0.32	<2	< 0.07	14	0.07	0.82
11:53	41	0.35	<2	<0.08	28	0.29	<2	< 0.02	0.64
11:56	36	0.33	4	0.11	<2	< 0.07	<2	< 0.02	0.44
11:59	37	0.33	<2	<0.08	27	0.28	49	0.13	0.88
12:02	<2	< 0.07	11	0.20	13	0.19	11	0.06	0.51
12:05	<2	< 0.07	<2	<0.08	<2	< 0.07	16	0.07	0.15
12:08	63	0.44	13	0.22	34	0.32	<2	< 0.02	0.98
12:11	30	0.29	7	0.16	57	0.42	<2	< 0.02	0.88
12:14	<2	< 0.07	<2	<0.08	<2	< 0.07	<2	< 0.02	_
12:17	29	0.29	18	0.26	<2	<0.07	<2	< 0.02	0.55
12:20	<2	< 0.07	<2	<0.08	<2	< 0.07	<2	< 0.02	-,
12:23	8	0.14	35	0.37	<2	< 0.07	<2	< 0.02	0.51
12:26	14	0.20	<2	<0.08	17	0.22	35	0.11	0.65
12:29	<2	< 0.07	4	0.12	18	0.23	<2	< 0.02	0.36
12:32	58	0.42	7	0.16	12	0.19	<2	<0.02	0.77
Average		0.20		0.17	<u></u>	0.13		0.03	0.56

Number 5

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent X

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

	Н	<sub>2</sub> S	Me	eSH	DI	MS	DN	1DS	TRS
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
				PM vent 4	Run 2				
12:40	8	0.15	<2	<0.08	24	0.27	<2	< 0.02	0.42
12:43	11	0.18	41	0.40	<2	< 0.07	25	0.09	0.76
12:46	97	0.55	<2	< 0.08	<2	< 0.07	<2	< 0.02	0.55
12:49	19	0.23	<2	<0.08	<2	< 0.07	<2	< 0.02	0.23
12:52	<2	< 0.07	<2	<0.08	51	0.40	<2	< 0.02	0.40
12:55	13	0.19	<2	<0.08	18	0.23	<2	< 0.02	0.42
12:58	<2	< 0.07	7	0.15	56	0.42	<2	< 0.02	0.58
13:01	7	0.14	<2	<0.08	<2	< 0.07	28	0.10	0.34
13:04	<2	< 0.07	<2	<0.08	14	0.20	35	0.11	0.43
13:07	68	0.46	9	0.18	10	0.17	<2	< 0.02	0.81
13:10	6	0.12	<2	<0.08	25	0.27	14	0.07	0.53
13:13	20	0.24	26	0.31	<2	< 0.07	<2	< 0.02	0.56
13:16	10	0.16	35	0.37	61	0.44	17	0.08	1.12
13:19	23	0.26	<2	<0.08	<2	< 0.07	<2	< 0.02	0.26
13:22	<2	< 0.07	<2	<0.08	12	0.18	23	0.09	0.36
13:25	44	0.37	45	0.42	5	0.12	<2	< 0.02	0.90
13:28	80	0.50	<2	<0.08	<2	< 0.07	<2	< 0.02	0.50
13:31°	<2	< 0.07	<2	<0.08	27	0.29	<2	< 0.02	0.29
13:34	<2	< 0.07	14	0.23	<2	< 0.07	14	0.07	0.36
13:37	<2	<0.07	17	0.25	10	0.17	33	0.11	0.64
Average		0.18		0.12		0.16		0.04	0.52

Number 6

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 1

Runz

Method 16 Calibration 1 Project Number: 15730.001.008
Operator: VD

Time	Н	2 <b>S</b>	Me	SH	DI	MS	DN	IDS	TRS
Tillie	area	ppm	area	ppm	area	ppm	area	ppm	ppm
13:45	13	0.19	<2	<0.08	<2	<0.07	22	0.09	0.37
13:48	11	0.18	<2	<0.08	33	0.32	<2	< 0.02	0.49
13:51	10	0.17	13	0.22	<2	< 0.07	11	0.06	0.50
13:54	13	0.19	<2	<0.08	<2	< 0.07	<2	< 0.02	0.19
13:57	30	0.30	<2	<0.08	<2	< 0.07	34	0.11	0.52
14:00	117	0.61	<2	<0.08	10	0.17	14	0.07	0.91
14:03	26	0.28	<2	<0.08	65	0.46	<2	< 0.02	0.73
14:06	37	0.33	9	0.18	<2	< 0.07	7	0.05	0.61
14:09	27	0.28	<2	<0.08	21	0.25	<2	< 0.02	0.53
14:12	5	0.12	15	0.24	<2	< 0.07	<2	< 0.02	0.36
14:15	5	0.12	14	0.22	26	0.28	16	0.07	0.77
14:18	25	0.27	8	0.17	29	0.30	<2	< 0.02	0.73
14:21	49	0.38	<2	<0.08	<2	< 0.07	<2	< 0.02	0.38
14:24	51	0.39	6	0.15	<2	< 0.07	12	0.06	0.67
14:27	119	0.62	<2	<0.08	<2	< 0.07	<2	< 0.02	0.62
14:30	56	0.41	13	0.22	10	0.17	23	0.09	0.98
14:33	59	0.42	31	0.35	<2	< 0.07	<2	< 0.02	0.77
14:36	40	0.35	<2	< 0.08	4	0.11	<2	< 0.02	0.45
14:39	23	0.26	11	0.20	92	0.55	<2	< 0.02	1.00
14:42	30	0.30	33	0.36	<2	<0.07	<2	<0.02	0.65
Average		0.31		0.11		0.13		0.03	0.61

Number 14

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent X

Method 16 Calibration 1 Project Number: 15730.001.008
Operator: VD

Time	H	2 <b>S</b>	Me	SH	D	MS	DN	IDS	TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
			Ca	libration	drift che	ck			
20:16	14345	7.84	<2	< 0.08	<2	< 0.07	<2	< 0.02	7.84
20:19	14713	7.94	<2	<0.08	<2	< 0.07	<2	< 0.02	7.94
20:22	14122	7.77	<2	<0.08	<2	<0.07	<2	<0.02	7.77
Average		7.85		<0.08		<0.07		<0.02	7.85

#### **RECOVERY DATA**

Number 2

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 14

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

After Run 3

Before Run 4 Start Time 11:06

**End Time 11:15** 

Recovery Gas to Probe, Time 11:06

Peak Areas, mv-sec

13991

13801

13923

Average

ppm

13905 7.71

Recovery Gas to GC, Time 11:12

Peak Areas, mv-sec

14345

14801

14524

Average

ppm

14556 7.90

Recovery 97.6%





#### **RECOVERY DATA**

Number 3

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 1 4

Method 16

Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 25 Jun 2021

After Run 6 Before Run 10

Start Time 14:45

**End Time** 14:58

Recovery Gas to Probe, Time 14:45

Peak Areas, mv-sec

14557 13955

14506

Average

ppm

14339 7.83

Recovery Gas to GC, Time 14:54

Peak Areas, mv-sec

15125

14482

14672

Average

ppm

14759 7.95

Recovery 98.5%

126



#### **CALIBRATION DATA**

Number 1

Project Number: 15730.001.008

Operator: **VD** 

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 1 4 Date: 24 Jun 2021 Method 16

Ambient	Temperature: 72°C		Pressure: 29.70 in.	•
Analyte	H <sub>2</sub> S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	460	457	298	232
Ret. Time, sec	25.0	35.0	63.0	132.0
1 Flow = <b>42.9</b> mL/Min	<b>10.7</b> ppm	<b>10.7</b> ppm	<b>6.95</b> ppm	<b>5.41</b> ppm
Time: 06:02		Peak Area	ıs, mv-sec	
	25099	20594	10407	44232
	24750	21533	10445	46016
	25597	21979	10703	45950
Average Area	25149	21369	10519	45399
2 Flow = 82.8 mL/Min	<b>5.56</b> ppm	<b>5.52</b> ppm	<b>3.60</b> ppm	<b>2.80</b> ppm
Time: 06:53		Peak Area	ıs, mv-sec	
	7926	6406	2923	14068
	7950	6306	2884	13591
	8444	6460	2990	14698
Average Area	8107	6390	2932	14119
3 Flow = 130 mL/Min	<b>3.54</b> ppm	<b>3.52</b> ppm	<b>2.29</b> ppm	<b>1.79</b> ppm
Time: 07:08		Peak Area	as, mv-sec	
	3069	2599	1371	5786
	3064	2578	1331	5729
	3088	2512	1340	5842
Average Area	3074	2563	1347	5786

12004



#### **CALIBRATION SUMMARY**

Number 1

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent

Method 16

Project Number: 15730.001.008

Operator: VD

H <sub>2</sub> S	1	2	3			
Time	06:02	06:53	07:08			3
Concentration, ppm	10.7	5.56	3.54			
Area, mv-sec	25149	8107	3074			
Calc. Conc., ppm	10.6	5.79	3.46			
% Error	-1.6	4.2	-2.4 /			
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.	
	1.8847	2.4717	0.9980	2	0.07	
MeSH	1	2	3		n n	
Time	06:02	06:53	07:08			
Concentration, ppm	10.7	5.52	3.52			
Area, mv-sec	21369	6390	2563			
Calc. Conc., ppm	10.6	5.62	3.48 /			
% Error	-0.7	1.8	-1.1			*
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
14/	1.9089	2.3742	0.9996	2	0.08	
DMS	1	2	3			
Time	06:02	06:53	07:08			
Concentration, ppm	6.95	3.60	2.29			
Area, mv-sec	10519	2932	1347			
Calc. Conc., ppm	7.00	3.53	2.32			
% Error	0.8	-2.0	1.2 /			
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
***	1.8617	2.4483	0.9995	2	0.07	
DMDS	1	2	3			*
Time	06:02	06:53	07:08			
Concentration, ppm	5.41	2.80	1.79			
Area, mv-sec	45399	14119	5786			
Calc. Conc., ppm	5.37	2.86	1.77 /			
% Error	-0.8	2.0	-1.2			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.8537	3.3043	0.9995	2	0.02	





#### **CALIBRATION SUMMARY**

Number 2

Client: New Indy

Project Number: 15730.001.008

Operator: **VD** 

Location: Catawba, SC
Source: Paper Machine Vent 1 4

Method 16

H₂S	1	2	3			
Time	19:32	19:43	19:59			
Concentration, ppm	10.5	6.99	3.74			
Area, mv-sec	24392	13907	4527			
Calc. Conc., ppm	10.3	7.29	3.68			
% Error	-2.5	4.3	-1.6			
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.	
	1.6380	2.7299	0.9976	2	0.03	
MeSH	1	2	3			
Time	19:32	19:43	19:59			
Concentration, ppm	10.5	6.95	3.71			
Area, mv-sec	23509	12131	3753			*
Calc. Conc., ppm	10.3	7.11	3.68			
% Error	-1.4	2.4	-0.9			
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.	
	1.7779	2.5690	0.9992	2	0.05	
DMS	1	2	3			
Time	19:32	19:43	19:59			
Concentration, ppm	6.82	4.53	2.42			
Area, mv-sec	10516	5246	1551			
Calc. Conc., ppm	6.73	4.63	2.40			
% Error	-1.3	2.2	-0.9			
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.	
	1.8539	2.4865	0.9993	2	0.07	*
DMDS	1	2	3			
Time	19:32	19:43	19:59			
Concentration, ppm	5.31	3.53	1.88			
Area, mv-sec	48003	24800	7538			
Calc. Conc., ppm	5.23	3.62	1.86			
% Error	-1.6	2.7	-1.0			
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.7949	3.3916	0.9990	2	0.02	





#### **CALIBRATION DATA**

Number 2

Client: New Indy Location: Catawba, SC

Source: Paper Machine Vent 1/4

Method 16

Project Number: 15730.001.008
Operator: VD

	e vent,	Ctriod 10		
Ambien	t Temperature: 72°C		Pressure: 29.70 in.	•
Analyte	H₂S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	460	457	298	232
Ret. Time, sec	25.0	35.0	63.0	132.0
1 Flow = <b>43.6</b> mL/Min	<b>10.5</b> ppm	<b>10.5</b> ppm	<b>6.82</b> ppm	<b>5.31</b> ppm
Time: 19:32		Peak Area	as, mv-sec	
	23668	22380	10086	46114
*	24884	23771	10653	47622
	24624	24375	10810	50274
Average Area	24392	23509	10516	48003
2 Flow = 65.8 mL/Min	<b>6.99</b> ppm	<b>6.95</b> ppm	<b>4.53</b> ppm	<b>3.53</b> ppm
Time: 19:43		Peak Area	as, mv-sec	
	14069	11744	5164	24545
	13746	12537	5293	24899
	13905	12112	5280	24958
Average Area	13907	12131	5246	24800
3 Flow = 123 mL/Min	<b>3.74</b> ppm	3.71 ppm	<b>2.42</b> ppm	<b>1.88</b> ppm
Time: 19:59		Peak Area	as, mv-sec	
	4288	3691	1547	7409
	4623	3823	1561	7662
	4672	3745	1545	7541
Average Area	4527	3753	1551	7538





#### **ANALYTES AND STANDARDS**

Client: New Indy Project Number: 15730.001.008

Location: Catawba, SC Operator: VD

Source: Paper Machine Vent 1 4 Method 16 Date: 24 Jun 2021

Analyte Molecular Weight	<b>H₂S</b> 34.08	<b>MeSH</b> 48.11	<b>DMS</b> 62.14	<b>DMDS</b> 94.20
Retention Time, sec	25.0	35.0	63.0	132.0
Peak Detection Window, sec	10.0	10.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	3.0	3.0
Ending Peak Width, sec	2.0	3.0	5.0	5.0
Permeation Device ID	T-51831	33-50536	89-50725	89-53405
Permeation Rate, ng/min	642	901	758	/ 895
Permeation Rate, nL/min*	460	457	298	232

Barometric Pressure: 29.70 in. Hg Ambient Temperature: 72 °F

No Oxygen Correction

\*Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min. Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

 $PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^{\circ} + T_a) / T_s] \times (P_s / P_b)$ 

Where:

PR<sub>nl</sub> = Permeation Rate by volume, nL/minPR<sub>ng</sub> = Permeation Rate by weight, ng/min

V<sub>mol</sub> = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

W<sub>mol</sub> = Molecular Weight of compound

**T**<sub>a</sub> = Ambient Temperature, °F

T<sub>s</sub> = Standard Temperature = 492°R (32 °F)

P<sub>s</sub> = Standard Pressure = 29.92 in Hg

P<sub>b</sub> = Barometric Pressure, in Hg

For example, H<sub>2</sub>S:

PR<sub>nl</sub> = 642 x (22.4 / 34.08) x [(460 + 72) / 492] x (29.92 / 29.70) = 460 nL/min

To calclate concentrations:

 $C = PR_{nl} / F_d$ 

Where:

**C** = Concentration, ppmv

**PR**<sub>nl</sub> = Permeation Rate by volume, nL/min

 $F_d$  = Flow rate of diluent, mL/min





#### **INSTRUMENT INFORMATION**

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 14

Method 16

Project Number: 15730.001.008

Operator: VD

Date: 24 Jun 2021

File: E:\6-25-21.trs

Program Version: 2.0, built 21 Feb 2015 File Version: 2.0

Computer: JWS-PROGRAMMING Trailer: 271

Analog Input Device: Keithley KUSB-3108 GC (

GC Channel: 16

Sampling Rate: 0.050 sec.

Data Interval: 0.5 sec.

Gas Chromatograph: GC-8A Serial No. C10494419420SA

**Detector Range: 10** 

	Gases		Temperatures, °C	Columns
	Press.	Flow		
	psi	mL/min	Column: 100	Primary: 3'
H <sub>2</sub>	30	50	Detector: 120	Secondary:
Air	30	60		Sample Loop: 6" unlined
Carrier	50	30		

#### **Injection Cycle**

Total Length: 180 sec Sampling Time: 160 sec Load/Backflush Time: 85 sec

#### **Default Integration Parameters**

Signal Threshold 0.67 mv Peak detection window ±10 sec

Minimum peak area 5 mv-sec Minimum peak height 5 mv above baseline

#### **Dynacalibrator**

Chamber Temperature 130.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.70 in. Hg

Number 1

Calibration 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 4

Project Number: 15730.001.008

Operator: **VD** 

Time	0	2	C	)2
Time	mv	%	mv	%
	PM ven	t 4 Ru	n 1	
12:46:45	6775	20.2	34	0.2
12:47:00	6777	20.2	34	0.2
12:47:15	6777	20.2	34	0.2
12:47:30	6775	20.2	35	0.2
12:47:45	6775	20.2	34	0.2
12:48:00	6777	20.2	34	0.2
12:48:15	6776	20.2	34	0.2
12:48:30	6778	20.2	35	0.2
12:48:45	6775	20.2	32	0.2
12:49:00	6776	20.2	31	0.2
12:49:15	6780	20.2	30	0.2
12:49:30	6775	20.2	31	0.2
12:49:45	6774	20.2	34	0.2
12:50:00	6777	20.2	32	0.2
12:50:15	6778	20.2	33	0.2
12:50:30	6776	20.2	32	0.2
12:50:45	6776	20.2	33	0.2
12:51:00	6776	20.2	32	0.2
12:51:15	6776	20.2	32	0.2
12:51:30	6776	20.2	31	0.2
12:51:45	6774	20.2	31	0.2
Avgs	6776	20.2	33	0.2

Number 2

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 4

Calibration 1

Project Number: 15730.001.008 Operator: VD

-	<b>-</b> :	0	2	C	$O_2$	
	Γime	mv	%	mv	%	
		PM ven	ıt 4 Ru	n 2		
13	:48:57	6773	20.2	34	0.2	
13	:49:12	6775	20.2	33	0.2	
13	:49:27	6775	20.2	34	0.2	
13	:49:42	6776	20.2	34	0.2	
13	:49:57	6774	20.2	34	0.2	
13	:50:12	6777	20.2	34	0.2	
13	:50:27	6775	20.2	33	0.2	
13	:50:42	6774	20.2	34	0.2	
13	:50:57	6776	20.2	34	0.2	
13	:51:12	6775	20.2	34	0.2	
13	:51:27	6774	20.2	34	0.2	
13	:51:42	6776	20.2	34	0.2	
13	:51:57	6773	20.2	34	0.2	
13	:52:12	6775	20.2	34	0.2	
13	:52:27	6766	20.2	35	0.2	
13	:52:42	6772	20.2	34	0.2	
13	:52:57	6775	20.2	34	0.2	
13	:53:12	6774	20.2	35	0.2	
13	:53:27	6774	20.2	34	0.2	
13	:53:42	6775	20.2	35	0.2	
13	:53:57	6775	20.2	34	0.2	
13	:54:12	6775	20.2	34	0.2	
13	:54:27	6773	20.2	35	0.2	
13	:54:42	6774	20.2	34	0.2	
	Avgs	6774	20.2	34	0.2	

Number 3

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 4

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

-	0	2	CC	) <sub>2</sub>
Time	mv	%	mv	%
	PM ven	t 4 Ru	ın 3	
15:01:47	6759	20.2	52	0.2
15:02:02	6759	20.2	51	0.2
15:02:17	6761	20.2	50	0.2
15:02:32	6759	20.2	49	0.2
15:02:47	6758	20.2	51	0.2
15:03:02	6761	20.2	51	0.2
15:03:17	6760	20.2	51	0.2
15:03:32	6760	20.2	53	0.2
15:03:47	6759	20.2	52	0.2
15:04:02	6758	20.2	51	0.2
15:04:17	6759	20.2	51	0.2
15:04:32	6761	20.2	52	0.2
15:04:47	6758	20.2	53	0.2
15:05:02	6759	20.2	52	0.2
15:05:17	6759	20.2	52	0.2
15:05:32	6760	20.2	52	0.2
15:05:47	6760	20.2	51	0.2
15:06:02	6759	20.2	52	0.2
15:06:17	6759	20.2	52	0.2
15:06:32	6759	20.2	52	0.2
15:06:47	6759	20.2	52	0.2
Avgs	6759	20.2	52	0.2

# **CALIBRATION DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 4

Project Number: 15730.001.008

Operator: VD

Date: 25 Jun 2021

Start Time: 08:20

 $O_2$ 

Method: EPA 3A

Calibration Type: Linear Regression

Slope	Curve Coefficients Intercept	Corr. Coeff.	91
19.5	CC454190	6576	
10.1	SG9168283BAL	3287	
Zero	-	8	
%	Cylinder ID	Result, mv	
	Calibration Results		

0.9998

CO₂ Method: EPA 3A Calibration Type: Linear Regression

-31

336.7

	Calibration Results	
%	Cylinder ID	Result, mv
Zero	-	5
10.2	SG9168283BAL	3276
20.4	CC454190	6722

Slope Intercept Corr. Coeff.
329.3 -20 0.9999



#### **CALIBRATION ERROR DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 4

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Start Time: 08:20

 $O_2$ 

Method: EPA 3A Span Conc. 19.5 %

**Slope** 336.7

Intercept -31.5

Standard	Response	Result	Difference	Error	Chahaa
%	mv	%	%	%	Status
Zero	8	0.1	0.1	0.5	Pass
10.1	3287	9.9	-0.2	-1.0	Pass
19.5	6576	19.6	0.1	0.5	Pass

CO<sub>2</sub>

Method: EPA 3A Span Conc. 20.4 %

**Slope** 329.3

Intercept -19.9

Standard %	Response mv	Result	Difference %	Error %	Status
Zero 10.2	5 3276	0.1 10.0	0.1 -0.2	0.5 ~ -1.0 ~ ,	Pass Pass
20.4	6722	20.5	0.1	0.5	Pass





#### **METHODS AND ANALYZERS**

Client: New Indy

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Location: Catawba, SC

Source: Paper Machine vent 4

File: C:\Users\Trailer 271\Documents\New Indy\6-25-21b.cem Program Version: 2.2, built 3 Jul 2020 File Version: 2.04

Computer: DESKTOP-GQ0I9UV Trailer: 271
Analog Input Device: Keithley KUSB-3108

#### Channel 1

Analyte O2
Method EPA 3A, Using Bias
Analyzer Make, Model & Serial No.
Full-Scale Output, mv 10000
Analyzer Range, % 20.0
Span Concentration, % 19.5

#### Channel 2

Analyte CO<sub>2</sub>
Method EPA 3A, Using Bias
Analyzer Make, Model & Serial No.
Full-Scale Output, mv
Analyzer Range, %
Span Concentration, %
CO<sub>2</sub>
EPA 3A, Using Bias
CAI 600 SN E07015-M
10000
25.0
20.4



## APPENDIX D

# VENT 6

New Indy Catawba, SC 15730.001.008 No. 6 Hood Exhaust Paper Machine Vent 6

#### **EMISSION CALCULATIONS**

Date Time Began Time Ended	Run 1 Run 2 Run 3 Mean 6/25/21 6/25/21 6/25/21 1555 1715 1820 1655 1816 1920
Volumetric Flow Rate, (Qs), DSCFM BWS % Oxygen Recovery, %	4.18E+04       4.18E+04       4.21E+04       4.19E+04         0.254       0.264       0.219       0.245         20.2       20.2       20.2       20.2         98.2       98.2       98.2       98.2
Total Reduced Sulfur (TRS MW)= 34.08  Concentration, ppm Emission Rate, lb/hr	$0.70 \ \phantom{0.0000000000000000000000000000000000$
H2S (H2S MW)= 34.08  Concentration, ppm  Concentration, ppm (Corrected for Recovery)  Emission Rate, lb/hr	0.21       0.22       0.22       0.22         0.21       0.22       0.22       0.22         0.05       0.05       0.05       0.05



New Indy Catawba, SC 15730.001.008 No. 6 Hood Exhaust

#### Paper Machine Vent 6

			I ape	Machine	v cht o
	ISOKINETIC CALC	ULATIONS			
Run Number		1	2	3	Mean
Date		6/25/21	6/25/21	6/25/21	
Time Began		1555	1715	1820	
Time Ended		1659	1808	1914 🗸	
	INPUT DAT		·		
Sampling Time, min	(Theta)	48.0	48	48	48
Stack Diameter, in.	(Dia.)	52	52	52	52
Barometric Pressure, in. Hg	(Pb)	29.68	29.68	29.68	29.68
Static Pressure, in. H2O	(Pg)	-0.75	-0.75	-0.75 🗸	-0.75
Pitot Tube Coefficient	(Cp)	0.84	0.84	0.84	0.84
Meter Correction Factor	(Y)	1.0030 🖊	1.0030	1.0030 🗸	1.0030
Orifice Calibration Value	(Delta H@)	1.8000 🎤	1.8000	1.8000	1.8000
Nozzle Diameter, in.	(Dn)	0.250	0.250	0.250	0.250
Meter Volume, ft <sup>3</sup>	(Vm)	30.737 🗸	31.150	31.398	31.095
Meter Temperature, °F	(Tm)	87.9 🗸	92.5 🗸	91.9	90.8
Meter Temperature, °R	(Tm-R)	547.9	552.5	551.9	550.8
Meter Orifice Pressure, in. H2O	(Delta H)	1.300	1.300	1.300	1.300
Ave Sq Rt Orifice Press, (in. H2O) <sup>1</sup> / <sub>2</sub>	((Delta H)½)avg)	1.140	1.140	1.140	1.140
Volume H2O Collected, mL	(Vlc)	213.5	226.0	178.5	206.0
CO2 Concentration, %	(CO2)	0.2 🗸	0.2 🗸	0.2	0.2
O2 Concentration, %	(O2)	20.2	20.2	20.2	20.2
Ave Sq Rt Velo Head, (in. H2O) <sup>1</sup> / <sub>2</sub>	((Delta P)½)avg)	1.196 🗸	1.210 🗸	1.158	1.188
Stack Temperature, °F	(Ts)	191.3	191.2	190.3	190.9
Stack Temperature, °R	(Ts-R)	651.3	651.2	650.3	650.9
Moisture Fraction (at Saturation)	(BWS)	0.660	0.659	0.646	0.655
	CALCULATED	DATA			
Nozzle Area, ft <sup>2</sup>	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft <sup>2</sup>	(As)	14.75	14.75	14.75	14.75
Stack Pressure, in. Hg	(Ps)	29.62	29.62	29.62	29.62
Meter Pressure, in. Hg	(Pm)	29.78	29.78	29.78	29.78
Standard Meter Volume, ft <sup>3</sup>	(Vmstd)	29.554	29.702	29.971	29.742
Standard Water Volume, ft <sup>3</sup>	(Vwstd)	10.049	10.638	8.402	9.696
Moisture Fraction (Measured)	(BWS)	0.254	0.264	0.219	0.245
`	(BWS)	0.254	0.264	0.219	0.245
Moisture Fraction (lower sat/meas)	· ·	28.84	28.84	28.84	28.84
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	26.09	25.98	26.47	26.18
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	78.85	79.90	75.73	78.16
Average Stack Gas Velocity, ft/sec	(Vs)				
Stack Gas Flow, actual, ft <sup>3</sup> /min	(Qa)	69772	70706	67009	69162
Stack Gas Flow, Std, ft <sup>3</sup> /min	(Qs)	41777	41778	42058	41871
Calibration check	(Yqa)	1.0196	1.0103	1.0018	1.011
Percent difference from Y	• • •				0.76%



		TS.																Pulp Dry	er #3 Pape	30.001.008 Machine, & #1-2 CBs ion Report
	Final 5.0000	COMMENTS															V <sub>m-std</sub> , scf	Q <sub>s</sub> , dscfm % Isokinetic	Calculated by	
Page 1 of 1	Leak Checks Leak Checks Initial O.CO Ig 12"	SAMPLE TRAIN VACUUM (in Hg)	24	7	44		~	7	8	7	8	7	7	7	7	7	Max Vac	(	Calcuit	
Pag	K Fa	NGER XIT IP (°F)	no	9		0	1							0			Max Temp/	couple Check	Result Result	
	Volume, @ Vac., Pilter ID		ي و	5	20 C	Č	9	9	20	10	66	69	3	9	0	59		Thermocouple Meter Temp., °F	Ker. 16	
	Hg H <sub>2</sub> O	FII	X/N					-0							_	7	Min/Max	4		
	2 200 7	E 3 E	252	250	253	6/2	254	253	250	122	253	256	652	247	257	295	Min/Max 245/257	-yrite M3A		
	ient Temp. 8 Lossure 29.06 c Pressure 29.06 longer Gain 204. a Gel Gain 8.9 Stack Area 14.7	PROBE TEMP (°F)	243	242	242	442	542	162	167	240	243	162	762	240	243	242	Min/Max 240/245	O <sub>2</sub> /CO <sub>2</sub> by Orsat Fyrite Leak Check, Pre-run	Post-run	
Moisture	Ambient Temp. 8 Baro. Pressure* 27.0 Static Pressure	DGM OUTET TEMP (°F)	282	20	2007	87	87	88	88	90	88			83	90	89	かった	O <sub>2</sub> /CO <sub>2</sub> Leak Che		
4	A A A B B B B B B B B B B B B B B B B B	DGM NLET	MA													+	Avg	20.2	710	
Method: EPA	0.84	STACK TEMP (°F)	900		193	0	92	16	68	90	-6	2	16	93	92	115	Avg Ts /	E	%ide, %	
Method	1.003 1.003 1.000 1.000 85 977 4073	AS METER DING (ft <sup>3</sup> )		0	8 00	1	2	9	5	10	1 6	3	7	2 6	1	181	olume /	Flue Gas Co Oxygen, %	Carbon Dioxide, % Moisture, %	
	4   -	D A	915.1	616	920.	424	126.	928.	-	932.			138.	940.	992.	949.08	36.737	ш.	2 0 2	
	Console ID  Meter Corr., Y  Console AH@  Probe ID/Length  Liner Material  Pitot ID/Coeff.  Thermo ID  Nozzle ID/Diams.	ORIFICE PRESSURE △H (in. H <sub>2</sub> O)	ena	3	nn	2	3	3	3	3	3	3	3	1:3	3	ú	NO AND AH	1402 VAH		
			7	1			1.	1.	-		17	1.	7	1:	1.	1	1.1	7.1.1		
	New Indy Catawba, SC Hood Exhaust Ref 5730.001.008 1 15/11	VELOCITY PRESSURE Ap (in. H <sub>2</sub> O)	1.7	1.2	7 · · ·		9-	1.6	1.3	1:	1.1	6.1	1.5	1.7	1,6	ر.	1.198	1.432	Comments	
Data		CLOCK TIME (planttime)														1.59	out elevation			
<b>Isokinetic Field Data</b>	2   6	ME	က မ	0	12	18	21	24	27	30	33	36	39	42	45	48	*Barometric Pressure is at port elevation		Integrated Air Services	
inetic	Client Location/Plant Source Sample Location W. O. Number Run Number Test Personnel																Barometric Pr	1551	grated A	
Isok	Sam W.	TRAVERSE POINT NO.	A-1	ю	4 3	9	7	. œ	P-1	2	е	4	5	9	7	80		3	Inte	209

# no. L thod Exhaust

Page 1 of 1	K Factor W/A  Leak Checks  Leak Checks  Initial Final Volume, ft <sup>3</sup> @ Vac., in. Hg /2" 6.00  Pitot 600  Sample ID W/A Sample ID FUN 2	FILTER IMPINGER SAMPLE  EXIT EXIT TRAIN TEMP (°F) TEMP (°F) (in Hg)	20	K CO	7	th th th')	<i>h</i> 52	65 4	67 4		63 4	27 4		h 55	17 55 /	Min/Max Max Temy Max Vac V <sub>m-std</sub> ,	Thermocouple Check Qs, dscfm	87 Calculated by QC by	5730.001.008 per Machine, te #1-2 CBs tation Report
Moisture	Ambient Temp. 82 °F Baro. Pressure* 27.68 in. Hg Static Pressure-, 75 in. Hg Impinger Gain 7.4 g Stack Area 44.75 ft² Total Traverse Points 16	DGM PROBE FILTER OUTET BOX TEMP (°F) TEMP (°F)	90 245 249 NI	662 10	1 293	92 244 756	3 240		292	3 244	93 243 251	ru		342 443 46	16	4v9 Tm Min/Max Min/Max Min/ 92.5 24 0/245 243/257	O <sub>2</sub> /CO <sub>2</sub> by Orsat F Leak Check, Pre-run	Post-run	
Method: EPA 4, N	A623 1.503 1.800 1.800 55 55 77 7084 7623 .250 in.	DRY GAS METER STACK DGW TEMP INLET (°F) TEMP (°F)	A/N 121 1.74P	00		156.8 192		1 9	1	5	466.5 193	976.3 191	2	974.2 190	7 061 4		Flue Gas Composition Oxygen, % 20, 2	Carbon Dioxide, % 0.7	
d Data	New Indy         Console ID           Catawba, SC         Meter Corr., Y           ANc 4 Hood Exhaust         Console ΔH@           15730.001.008         Probe ID/Length           15730.001.008         Liner Material           2         Pitot ID/Coeff.           72	CLOCK VELOCITY ORIFICE TIME PRESSURE $\Delta P$ (in $H_2O$ ) (in $H_2O$ )	1.3 1.3	7 7.	-1-	1.5 1.5	1.7 1.3	1.7 1.3		- 1-	1.5 1.5	1.5	1.5 1.3	1.6 1.3	1.6	port elevation Avg \day \day \land 1.30s	1.14688 1.1402	NN <sub>®</sub> Comments ces	
<b>Isokinetic Field Data</b>	Client Location/Plant Source 64 Sample Location W. O. Number Run Number Date Test Personnel 68	TRAVERSE SAMPLE TIME POINT (min) NO 0 /	A-1 3	6	12 12	9 29	7 21		_		36 35		6 42	7 45	8 48 /	*Barometric Pressure is at port elevation		Integrated Air Services	210

Page 1 of 1	K Factor	H <sub>2</sub> O Leak Checks	Volumo 63	@ Vac.,	Pitot	Sample ID rin 3	FILTER IMPINGER SAMPLE	TEMP (°F) TEMP (°F) V	N/A 66 2	1 59 2		52 2	53 2	2	53 2	23 2	5> 2	54 2		4	2 2 5	7 65	55 2	26 3	Min/Max Max Temp	Thermocouple Check Qs, dscfm Meter Temp. "F % Isokinetic	Calculated by	
PA 4, Moisture	Ambient Temp. 82 °F. Baro. Pressure* 7.68 in.	27	Silica Gel Gain	P.77	Stack Area 14.75 ft <sup>2</sup>	in. Total Traverse Points 16	DGM PROBE FILTER	1 (e	N/A 92 243 295	1 92 245 248	92 244 252	295 296 295	93 245 151	72 245 256	92 241 258	92 242 299	92 787 250	92 272 250	972 240 846	92 242 251	91 246 750	92 241 251	91 241 249	hb2 7h2 1/	Avg T <sub>m</sub> Min/Max Min/Max 71.9 237646 244/758	O <sub>2</sub> /CO <sub>2</sub> by Orsat Fyrite I	202	
Method: EPA	Console ID Ao25 Meter Corr., Y 1,003	Console △H@ 1.600	45	000	Thermo ID A025	Avg. Nozzle Diam250	ORIFICE DRY GAS METER STACK PRESSURE READING (ff.)			.3 986.7 191	161 7.588 5.	.3 984.6 191	.3 786.6 191		190.4	3 992.3 190		3 996.2 189	3	20	.3 1002.0 190	.3 1003.9 190	161 60001	1.3 1607.976 191	31.398 (10.2)	as Compositi	xide, %	
Isokinetic Field Data	Client New Indy Location/Plant Catawba, SC	rst	15730.001.008		Date 6/25 / 1/1	48 min.	TRAVERSE: SAMPLE TIME CLOCK VELOCITY FIME PRESSURE P	O (18: 30) (in. H <sub>2</sub> 0)	7.1	6   1.6	9:	12 [.5	15 (.6	18	21 1.6	24 1.6 1.	1.	30 [.3 ].	33 1.3 1.	36 .1 .1 .7.	39 ,70 1.	37.	45 1.7 1.	1.7	*Barometric Pressure is at port elevation Avg VAp /	-3	Air Services	

# Sample Recovery Field Data

Method: EPA 4, Moisture

Locatio	Client	New Indy Catawba, SC		V	Source V.O. Number		Hood Exha		
			ingers 1 - 3 measu						
Run No	1		Sample Date	6/25/21	Rec	overy Date	6/251	21	
Sample ID			Filter ID	MA			BEATE		
				npingers	upravila i		- /		
Contents	1	2	3			Imp.Total	Silica Gel	Total	
Final	881.3	878.9	671.8				grams		
Initial	753.7	815.1	658.5				868.6		
Gain	8127.61	L3.8 √	13.3			204.7	8.8V	213.50	
Im		ber	13. 3		1 11 10	Car.	10.0	1 217.79	
	I American II and the second second	2000			Labled?				
Silica	ser Condition				Sealed?				
Run No.	2		Sample Date	6/25/21	Reco	overy Date	6/25/2	,	
Sample ID			Filter ID		Analyst BEABE				
				npingers			2070		
	1	2	3			Imp.Total	Silica Gel	Total	
Contents	011-					1.13.1	grams		
Final	945.2	711.1	558.6				908.4	i ya ba	
Initial	775.7	666.8	553.8				901.0		
Gain	169.5	44.3	4.8	7. 1		218-6	7.4	726	
lm	pinger Color C	era 1			Labled?	/			
Silica G	iel Condition <u> </u>	and a man			Sealed?	/			
					- 4 7 7				
Run No.	3		Sample Date	6/15/21	Reco	overy Date	4/25/2		
Sample ID			Filter ID	N/A		Analyst	REALB	E	
				pingers	All Value 1				
Contents	1	2	3			Imp.Total	Silica Gel	Total	
Final	9570	707 1	127 //				grams		
Initial	857.8	783.2	637.4				973.4		
Gain	714.5 143.3 V	759.7	4.1				865.8	178.5	
		23.5	1.1			170.9	7.6 /	110.7	
		lear			Labled?	/			
Silica G	el Condition	rood	THE COUNTY OF TH		Sealed?				
		Che	eck COC for Sample ID	s of Media Blanks					





# Sample and Velocity Traverse Point Data Sheet - Method | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 157300.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.001.008 | 15730.00

Client		New Indy		Operator	VD / LF
Loaction/Plant		Catawba, SC		Date	e 15-Jun-21
Source		No. 6 Hood Exhaust		W.0. Numbe	r15730.001.008
Duct Type	<b>4</b>	Circular		Rectangular Duct	Indicate appropriate type
Traverse Type		Particulate Traverse	V	Velocity Traverse	

Distance from far wall to outside of port (in.) = C	52.125
Port Depth (in.) = D	0.125
Depth of Duct, diameter (in.) = C-D	52
Area of Duct (ft²)	14.75
Total Traverse Points	16
Total Traverse Points per Port	8

Rectangular Ducts Only	
Width of Duct, rectangular duct only (in.)	
Total Ports (rectangular duct only)	

Traverse Point Locations											
Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)								
1	3.2	1 1/2	2								
2	10.5	5 1/2	5 1/2								
3	19.4	10	10								
4	32.3	17	17								
5	67.7	35	35 1/2								
6	80.6	42	42								
7	89.5	46 1/2	46 1/2								
8	96.8	50 1/2	50 1/2								
9											
10											
11											
12											

Equivalent Diameter = (2\*L\*W)/(L+W)

			Trave	rse Poi	nt Lo	cation P	ercer	nt of Sta	ick -C	ircular		
		Number of Traverse Points										
	1	2	3	4	5	6	7	8	9	10	11	12
1		14.6		6.7		4.4		3.2		2.6		2.1
2	1	85.4		25	3700	14.6		10.5	B) 55	8.2	1/4	6.7
3				75		29.6		19.4		14.6		11.8
4		1 1 1 1 1	229	93.3		70.4	acres in	32.3	REO.	22.6	OT CO.	17.7
5						85.4		67.7		34.2		25
6		2018	1113		4 3	95.6		80.6		65.8	dally	35.0
7								89.5		77.4		64.
8			ARE.	31.5	11189	1	1	96.8	Silver	85.4	ignie.	75
9										91.8		82
10	Mai	W. Sall	13/10	SY OF		100		400	1000	97.4	Silvery.	88.
11												93.
12	2011	361	13/28		7.34	72/19	3011	1	Market State	ody.	1	97.

Port Diam. (in) =	4
Number of Ports =	2

Flow Disturbances								
Upstream - A (ft)	4.330							
Downstream - B (ft)	25.0							
Upstream - A (duct diameters)	1.00							
Downstream - B (duct diameters)	5.77							

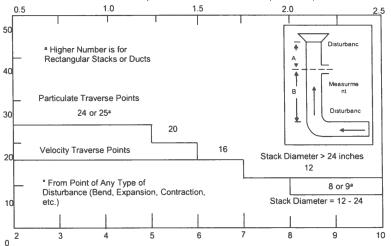
Diagram of Stack

Duct Diameters Upstream from Flow Disturbance\* (Distance A)

0.5 1.0 1.5 2.0 2.5

4 Disturbanc

Postprantar Stacks or Ducts



Duct Diameters Downstream from Flow Disturbance\* (Distance B)

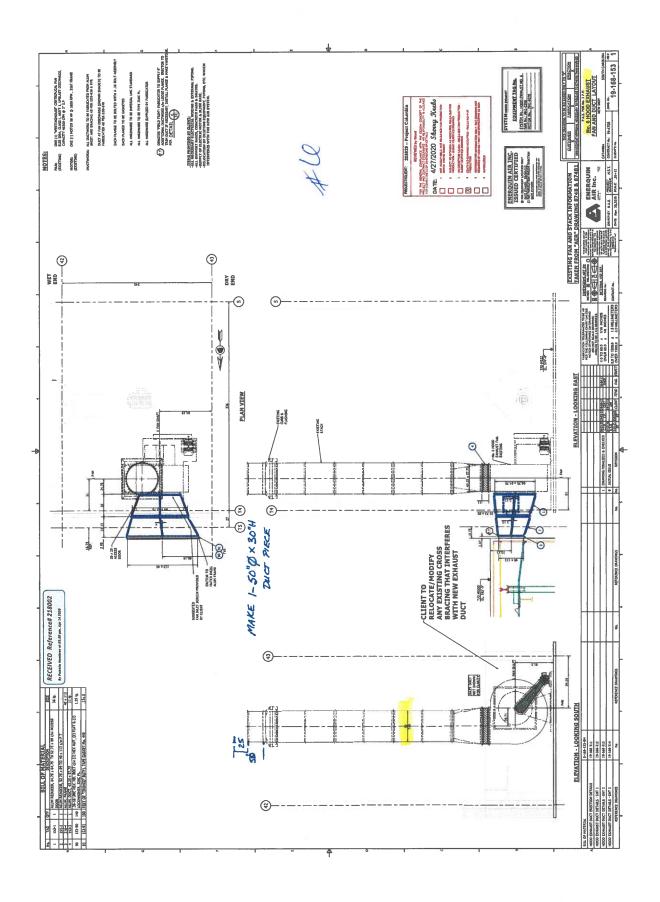
	[		Tr	averse	Point	Locati	on Pe	rcent o	f Stacl	k -Rect	angula	ar		
			Number of Traverse Points											
		1	2	3	4	5	6	7	8	9	10	-11	12	
	1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2	
	2	Jan.	75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5	
. [	3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8	
ا ـُ	4	shid.	100	dia.	87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2	
2	5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5	
a	6			The second	3 4		91.7	78.6	68.8	61.1	55.0	50.0	45.8	
t	7							92.9	81.3	72.2	65.0	59.1	54.2	
Ì	8			28.11			37.55		93.8	83.3	75.0	68.2	62.5	
0	9									94.4	85.0	77.3	70.8	
"	10		76	154					4.74		95.0	86.4	79.2	
	11											95.5	87.5	
	12	3,40	EZE			1145		301			E4 11	2334	95.8	

& Matrix
9 - 3 x 3
12 - 4 x 3
16 - 4 x 4
20 - 5 x 4
25 - 5 x 5
30 - 6 x 5
36 - 6 x 6
42 - 7 x 6
49 - 7 x 7

Rectangular Stack Points

Tape Measure I.D. #

TM-07



Number 11

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 1

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 25 Jun 2021

Start Time 15:55

**End Time 16:55** 

Average Measured TRS Conc. Recovery No. 5

**TRS Corrected for Recovery** 

0.56 ppm 98.2 %

0,57 ppm

0,70

9115

Number 12

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 25 Jun 2021

Start Time 17:15 End T

**End Time** 18:16

Average Measured TRS Conc.

Recovery No. 5

**TRS Corrected for Recovery** 

**2.58 ppm** 98.2 %

0.70

0.59 ppm

013g

915

Number 13

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Start Time 18:20 End Time 19:20

**Average Measured TRS Conc.** 

Recovery No. 5

**TRS Corrected for Recovery** 

0.63 0.69 0.57 ppm

98.2 % 0.59 ppm

O low

RO AIR

Number 11

		TRS	bpm	0.90	0.56	0.56	1.07	0.58	91	22	34	0.36	.05	.71	49	84	53	12	54	80	0.61	56	0.71	69
		F	a	O	0	O	<del>-</del>	O	O	O	O	0	<del>-</del>	Ö	O.	O	Ö	<del>-</del>	O.	O.	O.	O	0	Ö
1.008	021		V		0.024		0.024		0.024		0.024	0.024	0.024		0.024		0.024					0.024		
15730.001.008 VD	25 Jun 2021	DMDS	mdd	0.07		0.08		0.12		0.03				0.14		0.14		0.10	0.08	0.09	0.11		0.05	
: Number: Operator:	Date:		area	15	<b>%</b>	9	<b>%</b>	37	7	က	<b>~</b>	2	<2	24	<b>~</b>	20	<b>~</b>	26	19	23	32	7	ထ	
Project Number: Operator:			v	0.07		0.07					0.07						0.07				0.07			
		DMS	mdd		0.21		0.35	0.20	0.56	0.18		0.16	0.35	0.27	0.29	0.24		0.49	0.22	0.19		0.14	0.45	
	_		area	<2	16	<b>%</b>	39	4	92	7	<b>~</b>	တ	33	25	28	20	<b>~</b>	74	17	13	<2	7	63	
Method: 16	Calibration: 1		v			0.082	0.082	0.082		0.082	0.082	0.082		0.082	0.082	0.082		0.082	0.082	0.082	0.082	0.082	0.082	
Ž	Ca	MeSH	mdd	0.31	0.23				0.23				0.30				0.26							
			area	26	14	<b>%</b>	\$	7	15	<b>%</b>	<b>%</b>	<b>%</b>	24	<b>~</b>	<b>%</b>	<b>~</b>	9	<2	<b>~</b>	<b>2</b>	<b>~</b>	<b>~</b>	<2	
66	طام.			0.37	0.07	0.25	0.59	0.07	0.07	0.26	0.14	0.07	0.36	0.07	0.07	0.25	0.16	0.35	0.07	0.35	0.25	0.29	0.07	0.21
New Indy Catawba, SC	ent 1 6	S	v		0.071			0.071	0.071			0.071		0.071	0.071				0.071				0.071	
, sc	achine Ve	H <sub>2</sub> S	mdd	0.37		0.25	0.59			0.26	0.14		0.36			0.25	0.16	0.35		0.35	0.25	0.29		
New Indy Catawba,	Paper Ma		area	46	<b>~</b>	21	111	<b>~</b>	<b>~</b>	23	7	<b>%</b>	43	<b>%</b>	<b>%</b>	21	တ	42	7	41	21	29	<b>~</b>	
Client: Location:	Source:		Time	15:55	15:58	16:01	16:04	16:07	16:10	16:13	16:16	16:19	16:22	16:25	16:28	16:31	16:34	16:37	16:40	16:43	16:46	16:49	16:52	Averages

Number 12

			TRS	bbm	0.72	0.75	1.17	0.54	0.27	0.44	0.36	0.73	0.42	0.54	0.89	0.71	0.64	0.70	96.0	1.02	0.77	0.99	0.87	0.47	0.70
1.008		121		v		0.024			0.024		0.024		0.024	0.024	0.024		0.024		0.024		0.024	0.024			
15730.001.008	ΛD	25 Jun 2021	DMDS	ppm	0.07		0.08	0.08		0.04		0.10				0.10		0.09		0.08			0.16	0.07	
Project Number:	Operator:	Date:		area	16	<b>~</b>	19	18	<b>~</b>	9	<b>~</b>	27	<b>4</b>	<b>~</b>	<b>~</b>	30	<b>~</b>	24	<2	20	<b>~</b>	<2	20	16	
Project	O			v		0.07			0.07		0.07	0.07	0.07	0.07		0.07	0.07			0.07	0.07		0.07	0.07	
			DMS	mdd	0.22		0.36	0.20		0.20					0.23			0.34	0.19			0.34			
	9	_		area	16	<b>~</b>	41	14	<b>~</b>	14	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	19	<b>~</b>	<b>~</b>	37	12	<b>~</b>	<b>~</b>	37	<2	<2	
	Method: 16	Calibration: 1		v					0.082	0.082	0.082			0.082			0.082	0.082				0.082	0.082	0.082	
	_	O	MeSH	mdd	0.28	0.44	0.49	0.12				0.34	0.15		0.37	0.19			0.49	0.39	0.44				
				area	21	49	61	4	7	7	7	31	9	<b>~</b>	35	10	7	<b>~</b>	61	33	49	7	<b>~</b>	<2	
	NH	6/36			0.07	0.19	0.16	0.07	0.07	0.07	0.16	0.12	0.15	0.34	0.24	0.25	0.44	0.10	0.23	0.40	0.21	0.53	0.39	0.17	0.22
		/ent // 6	H <sub>2</sub> S	V	0.071			0.071	0.071	0.071															
q	a, SC	Paper Machine Vent # 6	I	mdd		0.19	0.16				0.16	0.12	0.15	0.34	0.24	0.25	0.44	0.10	0.23	0.40	0.21	0.53	0.39	0.17	
New Indy	Catawba, SC	Paper I		area	<2	14	တ	<b>~</b>	<2	<2	10	2	တ	38	21	21	63	4	19	52	15	83	51	10	
Client:	Location:	Source:		Time	17:15	17:18	17:21	17:24	17:27	17:30	17:33	17:36	17:39	17:42	17:45	17:48	17:52	17:55	17:58	18:01	18:04	18:07	18:10	18:13	Averages

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	1																							
		TRS	ppm	09.0	0.48	0.69	0.65	0.56	0.98	0.42	1.1	0.75	0.77	0.61	0.69	0.59	0.64	0.70	0.82	0.27	1.04	0.72	0.59	0.68
800.1	21		<b>v</b>		0.024					0.024								0.024	0.024	0.024		0.024	0.024	
15730.001.008	VD 25 Jun 2021	DMDS	mdd	0.10		0.08	0.12	0.13	0.08		0.21	0.11	0.11	0.08	0.07	0.05	0.10				0.17			
	Operator: Date:		area	30	<b>~</b>	19	40	45	19	<b>~</b>	111	33	36	17	14	တ	59	7	<b>~</b>	<2	72	<2	<2	
Project Number:	0		<b>v</b>		0.07			0.02		0.02				0.07				0.07		0.02	0.07			
		DMS	ppm	0.17		0.28	0.18		0.28		0.30	0.30	0.26		0.40	0.25	0.18		0.10			0.24	0.12	
			area	10	<b>~</b>	27	7	7	27	<b>~</b>	31	29	23	<2	51	22	<del>-</del>	<b>~</b>	4	<b>~</b>	<2	20	9	
1	Method: 16 Calibration: 1		v	0.082		0.082	0.082	0.082		0.082			0.082	0.082	0.082	0.082	0.082			0.082	0.082	0.082		
	⊼ S	MeSH	mdd		0.29				0.23		0.24	0.16						0.17	0.22				0.22	
			area	<b>~</b>	22	<b>~</b>	7	7	4	7	15	7	<b>~</b>	<b>~</b>	<2	<2	<2	∞	13	7	<2	7	13	
	36/8			0.14	0.07	0.16	0.16	0.15	0.31	0.22	0.15	0.07	0.20	0.30	0.07	0.15	0.18	0.41	0.46	0.07	0.55	0.35	0.20	0.22
	Catawba, SC Paper Machine Vent $Y^{\omega} orall_{g/\phi}$	S	v		0.071							0.071			0.071					0.071				
<u>&gt;</u>	a, SC lachine V	H <sub>2</sub> S	mdd	0.14		0.16	0.16	0.15	0.31	0.22	0.15		0.20	0.30		0.15	0.18	0.41	0.46		0.55	0.35	0.20	
New Indy	Catawba, SC Paper Machir		area	ω	<b>~</b>	10	ဝ	∞	33	17	∞	<b>~</b>	4	31	<b>~</b>	œ	12	26	89	<b>~</b>	26	42	14	
Client:	Location: Source:		Time	18:20	18:23	18:26	18:29	18:32	18:35	18:38	18:41	18:44	18:47	18:50	18:53	18:56	18:59	19:02	19:05	19:08	19:11	19:14	19:17	Averages

Number 1

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 1/4

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

Time	Н	<sub>2</sub> S	Me	SH	DI	MS	DN	IDS	TRS
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
15:55	46	0.37	26	0.31	<2	<0.07	<b>₹</b> 15	0.07	0.83
15:58	<2	<0.07	14	0.23	16	0.21	<2	< 0.02	0.44
16:01	21	0.25	<2	<0.08	<2	< 0.07	19	0.08	0.41
16:04	111	0.59	<2	<0.08	39	0.35	<2	< 0.02	0.94
16:07	<2	< 0.07	<2	<0.08	14	0.20	37	0.12	0.43
16:10	<2	< 0.07	15	0.23	95	0.56	<2	< 0.02	0.79
16:13	23	0.26	<2	<0.08	11	0.18	3	0.03	0.49
16:16	7	0.14	<2	<0.08	<2	< 0.07	<2	< 0.02	0.14
16:19	<2	< 0.07	<2	<0.08	9	0.16	<2	< 0.02	0.16
16:22	43	0.36	24	0.30	39	0.35	<2	< 0.02	1.00
16:25	<2	< 0.07	<2	<0.08	25	0.27	54	0.14	0.56
16:28	<2	< 0.07	<2	<0.08	28	0.29	<2	< 0.02	0.29
16:31	21	0.25	<2	<0.08	20	0.24	50	0.14	0.76
16:34	9	0.16	18	0.26	<2	< 0.07	<2	< 0.02	0.41
16:37	42	0.35	<2	<0.08	74	0.49	26	0.10	1.04
16:40	<2	<0.07	<2	<0.08	17	0.22	19	0.08	0.38
16:43	41	0.35	<2	<0.08	13	0.19	23	0.09	0.72
16:46	21	0.25	<2	<0.08	<2	< 0.07	32	0.11	0.46
16:49	29	0.29	<2	<0.08	7	0.14	<2	< 0.02	0.43
16:52	<2	<0.07	<2	<0.08	63	0.45	8	0.05	0.55
Average		0.18		<0.08		0.22		0.05	0.56



Number 2

Client: New Indy

Location: Catawba, SC
Source: Paper Machine Vent 1/6

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

Time	Н	l <sub>2</sub> S	Me	SH	DI	MS	DN	IDS	TRS
Tillie	area	ppm	area	ppm	area	ppm	area	ppm	ppm
17:15	<2	<0.07	21	0.28	16	0.22	16	0.07	0.65
17:18	14	0.19	49	0.44	<2	< 0.07	<2	< 0.02	0.63
17:21	9	0.16	61	0.49	41	0.36	19	0.08	1.17
17:24	<2	< 0.07	4	0.12	14	0.20	18	0.08	0.47
17:27	<2	< 0.07	<2	<0.08	<2	< 0.07	<2	< 0.02	_9.
17:30	<2	< 0.07	<2	<0.08	14	0.20	6	0.04	0.29
17:33	10	0.16	<2	<0.08	<2	< 0.07	<2	<0.02	0.16
17:36	5	0.12	31	0.34	<2	< 0.07	27	0.10	0.66
17:39	9	0.15	6	0.15	<2	< 0.07	<2	< 0.02	0.30
17:42	38	0.34	<2	<0.08	<2	<0.07	<2	< 0.02	0.34
17:45	21	0.24	35	0.37	19	0.23	<2	< 0.02	0.85
17:48	21	0.25	10	0.19	<2	< 0.07	30	0.10	0.64
17:52	63	0.44	<2	<0.08	<2	< 0.07	<2	< 0.02	0.44
17:55	4	0.10	<2	<0.08	37	0.34	24	0.09	0.62
17:58	19	0.23	61	0.49	12	0.19	<2	< 0.02	0.91
18:01	52	0.40	39	0.39	<2	< 0.07	20	0.08	0.95
18:04	15	0.21	49	0.44	<2	< 0.07	<2	< 0.02	0.65
18:07	89	0.53	<2	<0.08	37	0.34	<2	< 0.02	0.86
18:10	51	0.39	<2	<0.08	<2	<0.07	70	0.16	0.72
18:13	10	0.17	<2	<0.08	<2	<0.07	16	0.07	0.32
Average	<del>)</del>	0.20		0.18		0.10		0.04	0.58





Number 3

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 1 4

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

Time	Н	<sub>2</sub> S	Me	sH	DI	MS	DN	1DS	TRS
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
18:20	8	0.14	<2	<0.08	10	0.17	30	0.10	0.52
18:23	<2	<0.07	22	0.29	<2	< 0.07	<2	< 0.02	0.29
18:26	10	0.16	<2	<0.08	27	0.28	19	0.08	0.61
18:29	9	0.16	<2	<0.08	11	0.18	40	0.12	0.57
18:32	8	0.15	<2	<0.08	<2	< 0.07	45	0.13	0.40
18:35	33	0.31	14	0.23	27	0.28	19	0.08	0.98
18:38	17	0.22	<2	<0.08	<2	<0.07	<2	< 0.02	0.22
18:41	8	0.15	15	0.24	31	0.30	111	0.21	1.11
18:44	<2	< 0.07	7	0.16	29	0.30	33	0.11	0.67
18:47	14	0.20	<2	<0.08	23	0.26	36	0.11	0.69
18:50	31	0.30	<2	<0.08	<2	< 0.07	17	0.08	0.46
18:53	<2	< 0.07	<2	<0.08	51	0.40	14	0.07	0.54
18:56	8	0.15	<2	<0.08	22	0.25	9	0.05	0.51
18:59	12	0.18	<2	<0.08	11	0.18	29	0.10	0.56
19:02	56	0.41	8	0.17	<2	< 0.07	<2	< 0.02	0.58
19:05	68	0.46	13	0.22	4	0.10	<2	< 0.02	0.78
19:08	<2	<0.07	<2	<0.08	<2	<0.07	<2	< 0.02	-
19:11	97	0.55	<2	<0.08	<2	<0.07	72	0.17	0.89
19:14	42	0.35	<2	<0.08	20	0.24	<2	< 0.02	0.59
19:17	14	0.20	13	0.22	6	0.12	<2	<0.02	0.54
Average		0.20		<0.08		0.15		0.07	0.5755





Number 14

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 16

Method 16

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Time	H	2S	Me	SH	D	MS	DN	IDS	TRS
 	area	ppm	area	ppm	area	ppm	area	ppm	ppm
			Ca	libration	drift che	ck			
20:16	14345	7.84	<2	<0.08	<2	< 0.07	<2	< 0.02	7.84
20:19	14713	7.94	<2	<0.08	<2	< 0.07	<2	< 0.02	7.94
20:22	14122	7.77	<2	<0.08	<2	<0.07	<2	<0.02	7.77
Average		7.85		<0.08		<0.07		<0.02	7.85



## **RECOVERY DATA**

Number 4

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 16

Method 16

Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 25 Jun 2021

After Run 10

Start Time 15:41

**End Time** 15:52

Before Run 11

**Recovery Gas to Probe, Time 15:41** 

Peak Areas, mv-sec

13485 14713

15050

Average

ppm

14416

7.86

Recovery Gas to GC, Time 15:48

Peak Areas, mv-sec

15015

14984

15595

Average

ppm

15198

8.08

Recovery 97.2%

OX



### **RECOVERY DATA**

Number 5

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 1 4

Method 16

Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 25 Jun 2021

After Run 13 Before Run 14

Start Time 19:19

**End Time** 19:29

54

**Recovery Gas to Probe, Time 19:19** 

Peak Areas, mv-sec

13784

14634

14808

Average

ppm

14409

7.85

Recovery Gas to GC, Time 19:26

Peak Areas, mv-sec

14826

14809

15121

Average

ppm

14918 8.00

Recovery 98.2% <

## **CALIBRATION DATA**

Number 1

Project Number: 15730.001.008

Operator: VD

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 1 4

Method 16

Date: 24 Jun 2021

				ZC. Z- Cull ZCZ
Ambie Analyte	ent Temperature: 72°C H₂S	Barometric F MeSH	Pressure: 29.70 in.	Hg <b>DMD</b> S
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
				232
Perm. Rate, nL/min	460	457	298	
Ret. Time, sec	25.0	35.0	63.0	132.0
1 Flow = 42.9 mL/Min	<b>10.7</b> ppm	<b>10.7</b> ppm	<b>6.95</b> ppm	<b>5.41</b> ppm
Time: 06:02		Peak Area	ıs, mv-sec	18
	25099	20594	10407	44232
	24750	21533	10445	46016
	25597	21979	10703	45950
Average Area	25149	21369	10519	45399
2 Flow = 82.8 mL/Min	<b>5.56</b> ppm	<b>5.52</b> ppm	<b>3.60</b> ppm	<b>2.80</b> ppm
Time: 06:53		Peak Area	ıs, mv-sec	
254	7926	6406	2923	14068
	7950	6306	2884	13591
	8444	6460	2990	14698
Average Area	8107	6390	2932	14119
3 Flow = 130 mL/Min	<b>3.54</b> ppm	<b>3.52</b> ppm	<b>2.29</b> ppm	1.79 ppm
Time: 07:08		Peak Area	ıs, mv-sec	
	3069	2599	1371	5786
	3064	2578	1331	5729
	3088	2512	1340	5842
Average Area	3074	2563	1347	5786



SK



## **CALIBRATION SUMMARY**

Number 1

Project Number: 15730.001.008

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 1/6

Method 16

Operator: VD
Date: 24 Jun 2021

H₂S	1	2	3			
Time	06:02	06:53	07:08			
Concentration, ppm	10.7	5.56	3.54			
Area, mv-sec	25149	8107	3074			
Calc. Conc., ppm	10.6	5.79	3.46			
% Error	-1.6	4.2	-2.4			
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.	
	1.8847	2.4717	0.9980	2	0.07	
MeSH	1	2	3			
Time	06:02	06:53	07:08			
Concentration, ppm	10.7	5.52	3.52			
Area, mv-sec	21369	6390	2563			
Calc. Conc., ppm	10.6	5.62	3.48			
% Error	-0.7	1.8	-1.1 ~			
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.	
	1.9089	2.3742	0.9996	2	0.08	
DMS	1	2	3			
Time	06:02	06:53	07:08			
Concentration, ppm	6.95	3.60	2.29			
Area, mv-sec	10519	2932	1347			
Calc. Conc., ppm	7.00	3.53	2.32			
% Error	0.8	-2.0	1.2			
<b>Calibration Curve</b>	Slope	Intercept		Min. Area	Det. Lim.	
	1.8617	2.4483	0.9995	2	0.07	
			5.5			
DMDS	1	2	3			
Time	06:02	06:53	07:08			
Concentration, ppm	5.41	2.80	1.79			
Area, mv-sec	45399	14119	5786			
Calc. Conc., ppm	5.37	2.86	1.77			
% Error	-0.8	2.0	-1.2			•
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.	
	1.8537	3.3043	0.9995	2	0.02	

## **CALIBRATION DATA**

Number 2

Project Number: **15730.001.008**Operator: **VD**Date: **25 Jun 2021** 

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 1

Method 16

Ambiant	Tomporatura: 72°C	Parametria F	Proceure: 20 70 in	На
Ambient Analyte	Temperature: 72°C H <sub>2</sub> S	MeSH	Pressure: 29.70 in. DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	460	457	298	232
Ret. Time, sec	25.0	35.0	63.0	132.0
1 Flow = 43.6 mL/Min	<b>10.5</b> ppm	<b>10.5</b> ppm	<b>6.82</b> ppm	<b>5.31</b> ppm
Time: 19:32	IU.J ppili		is, mv-sec	<b>0.01</b> ppiii
11me. 15.32	22660	22380	10086	46114
	23668 24884	23771	10653	47622
	_ : - : - :		10833	50274
A A	24624	24375		
Average Area	24392	23509	10516	48003
2 Flow = 65.8 mL/Min	<b>6.99</b> ppm	<b>6.95</b> ppm	<b>4.53</b> ppm	<b>3.53</b> ppm
Time: 19:43		Peak Area	ıs, mv-sec	
	14069	11744	5164	24545
	13746	12537	5293	24899
	13905	12112	5280	24958
Average Area	13907	12131	5246	24800
3 Flow = 123 mL/Min	<b>3.74</b> ppm	<b>3.71</b> ppm	<b>2.42</b> ppm	<b>1.88</b> ppm
Time: 19:59		Peak Area	is, mv-sec	
	4288	3691	1547	7409
	4623	3823	1561	7662
	4672	3745	1545	7541
Average Area	4527	3753	1551	7538





## **CALIBRATION SUMMARY**

Number 2

Client: New Indy Location: Catawba, SC

Project Number: 15730.001.008

Operator: VD

Source: Paper Machine Vent 16

Method 16

	-				
H₂S	1	2	3		
Time	19:32	19:43	19:59		
Concentration, ppm	10.5	6.99	3.74		
Area, mv-sec	24392	13907	4527		
Calc. Conc., ppm	10.3	7.29	3.68		
% Error	-2.5	4.3	-1.6		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.6380	2.7299	0.9976	2	0.03
MeSH	1	2	3		
Time	19:32	19:43	19:59		
Concentration, ppm	10.5	6.95	3.71		ž
Area, mv-sec	23509	12131	3753		
Calc. Conc., ppm	10.3	7.11	3.68		
% Error	-1.4	2.4	-0.9		
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.7779	2.5690	0.9992	2	0.05
DMS	1	2	3		
Time	19:32	19:43	19:59		
Concentration, ppm	6.82	4.53	2.42		
Area, mv-sec	10516	5246	1551		
Calc. Conc., ppm	6.73	4.63	2.40		
% Error	-1.3	2.2	-0.9		
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8539	2.4865	0.9993	2	0.07
DMDS	1	2	3		
Time	19:32	19:43	19:59		
Concentration, ppm	5.31	3.53	1.88		
Area, mv-sec	48003	24800	7538		
Calc. Conc., ppm	5.23	3.62	1.86		
% Error	-1.6	2.7	-1.0		
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.
	1.7949	3.3916	0.9990	2	0.02





### **ANALYTES AND STANDARDS**

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 16 Method 16

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

Analyte Molecular Weight	<b>H₂S</b> 34.08	<b>MeSH</b> 48.11	<b>DMS</b> 62.14	<b>DMDS</b> 94.20
Retention Time, sec	25.0	35.0	63.0	132.0
Peak Detection Window, sec	10.0	10.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	3.0	3.0
Ending Peak Width, sec	2.0	3.0	5.0	5.0
Permeation Device ID	T-51831	33-50536	89-50725	89-53405/
Permeation Rate, ng/min	642 /	901	758	895
Permeation Rate, nL/min*	460	457	298	232

Barometric Pressure: 29.70 in. Hg Ambient Temperature: 72 °F

No Oxygen Correction

 $PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^{\circ} + T_a) / T_s] \times (P_s / P_b)$ 

Where:

PR<sub>nl</sub> = Permeation Rate by volume, nL/min PR<sub>ng</sub> = Permeation Rate by weight, ng/min

V<sub>mol</sub> = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

 $\mathbf{W}_{mol}$  = Molecular Weight of compound

T<sub>a</sub> = Ambient Temperature, °F

T<sub>s</sub> = Standard Temperature = 492°R (32 °F)

P<sub>s</sub> = Standard Pressure = 29.92 in Hg

P<sub>b</sub> = Barometric Pressure, in Hg

For example, H<sub>2</sub>S:

PR<sub>nl</sub> = 642 x (22.4 / 34.08) x [(460 + 72) / 492] x (29.92 / 29.70) = 460 nL/min

To calclate concentrations:

 $C = PR_{nl} / F_{d}$ 

Where:

C = Concentration, ppmv

PR<sub>nl</sub> = Permeation Rate by volume, nL/min

**F**<sub>d</sub> = Flow rate of diluent, mL/min

<sup>\*</sup>Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min. Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

#### INSTRUMENT INFORMATION

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 16

Method 16

Project Number: 15730.001.008

Operator: VD

Date: 24 Jun 2021

File: E:\6-25-21.trs

Program Version: 2.0, built 21 Feb 2015

File Version: 2.0

**Computer:** JWS-PROGRAMMING

Trailer: 271

Analog Input Device: Keithley KUSB-3108

GC Channel: 16

Sampling Rate: 0.050 sec.

Data Interval: 0.5 sec.

Gas Chromatograph: GC-8A Serial No. C10494419420SA

**Detector Range: 10** 

	Gases		Temperatures, °C	Columns
	Press. psi	Flow mL/min	Column: 100	Primary: 3'
$H_2$	30	50	Detector: 120	Secondary:
Air	30	60		Sample Loop: 6" unlined
Carrier	50	30		

#### **Injection Cycle**

Total Length: 180 sec

Sampling Time: 160 sec

Load/Backflush Time: 85 sec

#### **Default Integration Parameters**

Signal Threshold 0.67 mv Peak detection window ±10 sec Minimum peak area 5 mv-sec Minimum peak height 5 mv above baseline

#### **Dynacalibrator**

Chamber Temperature 130.0°C **Ambient Temperature** 72.0°F Barometric Pressure 29.70 in. Hg

Number 1

Client: New Indy

Location: Catawba, SC
Source: Paper Machine vent 6

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

<b>T</b>	С	)2	C	O <sub>2</sub>
Time	mv	%	mv	%
	PM ver	nt 6 Ru	un 1	
17:56:5	9 6779	20.2	34	0.2
17:57:1	4 6779	20.2	35	0.2
17:57:2	9 6780	20.2	34	0.2
17:57:4	4 6781	20.2	34	0.2
17:57:5	9 6779	20.2	35	0.2
17:58:1	4 6781	20.2	35	0.2
17:58:2	9 6781	20.2	34	0.2
17:58:4	4 6778	20.2	35	0.2
17:58:5	9 6780	20.2	34	0.2
17:59:1	4 6780	20.2	36	0.2
17:59:2		20.2	34	0.2
17:59:4	4 6779	20.2	36	0.2
17:59:5	6779	20.2	37	0.2
18:00:1	4 6780	20.2	36	0.2
18:00:2		20.2	37	0.2
18:00:4	4 6781	20.2	37	0.2
18:00:5		20.2	38	0.2
18:01:1	4 6779	20.2	37	0.2
18:01:2	9 6781	20.2	37	0.2
18:01:4	4 6779	20.2	37	0.2
18:01:5		20.2	36	0.2
18:02:1		20.2	38	0.2
18:02:2	9 6774	20.2	41	0.2
18:02:4		20.2	41	0.2
18:02:5		20.2	41	0.2
Avgs		20.2	36	0.2

Number 2

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 6

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Time		<b>O</b> <sub>2</sub>		CC	)2
Tim	e m		%	mv	%
	PM	vent (	6 Ru	n 2	
18:28	:22 67	77 2	0.2	34	0.2
18:28	:37 67	78 2	20.2	35	0.2
18:28	:52 67	75 2	20.2	33	0.2
18:29	:07 67	78 2	20.2	33	0.2
18:29	:22 67	78 2	0.2	35	0.2
18:29	:37 67	79 2	20.2	35	0.2
18:29	:52 67	78 2	20.2	34	0.2
18:30	:07 67	77 2	20.2	32	0.2
18:30	:22 67	79 2	20.2	34	0.2
18:30	:37 67	78 2	20.2	35	0.2
18:30	:52 67	78 2	20.2	34	0.2
18:31	:07 67	78 2	20.2	33	0.2
18:31	:22 67	79 2	20.2	34	0.2
18:31	:37 67	78 2	20.2	34	0.2
Avg			20.2	34	0.2

Number 3

Client: New Indy Location: Catawba, SC

Source: Paper Machine vent 6

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

T	0	2	C	$\mathcal{O}_2$
Time	mv	%	mv	%
	PM ven	t 6 Ru	n 3	
19:27:17	6777	20.2	34	0.2
19:27:32	6777	20.2	37	0.2
19:27:47	6777	20.2	34	0.2
19:28:02	6778	20.2	34	0.2
19:28:17	6777	20.2	34	0.2
19:28:32	6777	20.2	36	0.2
19:28:47	6778	20.2	36	0.2
19:29:02	6779	20.2	37	0.2
19:29:17	6777	20.2	38	0.2
19:29:32	6777	20.2	37	0.2
19:29:47	6777	20.2	37	0.2
19:30:02	6777	20.2	35	0.2
19:30:17	6777	20.2	36	0.2
19:30:32	6779	20.2	34	0.2
19:30:47	6778	20.2	33	0.2
Avgs	6777	20.2	35	0.2

Number 4

Calibration 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 6

Project Number: 15730.001.008

Operator: **VD** 

Time	0	2	CC	) <sub>2</sub>
Time	mv	%	mv	%
19:44:04	3363	10.1	3207	9.8
19:44:19	3314	9.9	3241	9.9
19:44:34	3314	9.9	3247	9.9
SG9168283	BAL 10	.12 - 0	2 10.1	16 - CO2
19:44:49	3313	9.9	3246	9.9
19:45:04	3311	9.9	3247	9.9
19:45:19	3312	9.9	3250	9.9
19:45:34	3312	9.9	3248	9.9
19:45:49	3311	9.9	3249	9.9
19:46:04	3311	9.9	3249	9.9
19:46:19	3312	9.9	3251	9.9
19:46:34	3311	9.9	3251	9.9
19:46:49	3311	9.9	3250	9.9
19:47:04	3310	9.9	3248	9.9
19:47:19	3311	9.9	3248	9.9
Avgs	3315	9.9	3245	9.9
_				

#### **CALIBRATION DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 6

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Start Time: 08:20

 $O_2$ 

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

Cylinder ID Result, mv 8 10.1 🗸 SG9168283BAL 3287 19.5 CC454190 6576

**Curve Coefficients** 

Slope Intercept 336.7 -31

%

Zero

Corr. Coeff.

0.9998

CO<sub>2</sub>

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

% Cylinder ID Result, mv Zero 5 10.2 🗸 SG9168283BAL 3276 20.4 CC454190 6722

**Curve Coefficients** 

Slope Intercept Corr. Coeff. 0.9999 329.3 -20



## **CALIBRATION ERROR DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 6

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Start Time: 08:20

 $O_2$ 

Method: EPA 3A Span Conc. 19.5 %

**Slope** 336.7

Intercept -31.5

CO<sub>2</sub>

Method: EPA 3A

Span Conc. 20.4 %

**Slope** 329.3

Intercept -19.9

Standard % Zero	Response mv	<b>Result</b> % 0.1	Difference % 0.1	Error % 0.5 /	Status Pass
10.2	3276	10.0	-0.2	-1.0 /	Pass
20.4	6722	20.5	0.1	0.5	Pass



#### **METHODS AND ANALYZERS**

Client: New Indy Project Number: 15730.001.008

Location: Catawba, SC Operator: VD

Source: Paper Machine vent 6 Date: 25 Jun 2021

File: C:\Users\Trailer 271\Documents\New Indy\6-25-21c.cem Program Version: 2.2, built 3 Jul 2020 File Version: 2.04

Computer: DESKTOP-GQ0I9UV Trailer: 271
Analog Input Device: Keithley KUSB-3108

#### Channel 1

Analyte O<sub>2</sub>

Method EPA 3A, Using Bias Analyzer Make, Model & Serial No. CAI 600 SN E07015-M

Full-Scale Output, mv 10000
Analyzer Range, % 20.0
Span Concentration, % 19.5

#### Channel 2

Analyte CO<sub>2</sub>

Method EPA 3A, Using Bias

Analyzer Make, Model & Serial No. CAI 600 SN E07015-M

Full-Scale Output, mv 10000 Analyzer Range, % 25.0 Span Concentration, % 20.4



## APPENDIX D

## VENT 7

New Indy Catawba, SC 15730.001.008 No. 7 Hood Exhaust Paper Machine Vent 7

#### **EMISSION CALCULATIONS**

Date Time Beg			Run 1 6/26/21 945 1046	/	Run 2 6/26/21 1050 1150	/	Run 3 6/26/21 1155 1255	/	Mean	
Volumetri BWS % Oxyger Recovery,			6.40E+04 0.261 20.2 93.9	1	6.42E+04 0.242 20.2 93.9	4 /	6.52E+04 0.254 20.2 93.9		6.45E+04 0.252 20.2 93.9	
Total Rec	luced Sulfur ( Concentration, ppm Emission Rate, lb/hr	TRS MW)=	34.08	0.48 0.16	1	0.50 0.17	/	0.59 0.20	/	0.52 0.18
H2S	Concentration, ppm Concentration, ppm (Cor Emission Rate, lb/hr	H2S MW)= rected for Reco	34.08 overy)	0.10 0.11 0.04	<u> </u>	0.09 0.10 0.03	/	0.16 0.17 0.06	/	0.12 0.12 0.04



New Indy Catawba, SC 15730.001.008 No. 7 Hood Exhaust

## Paper Machine Vent 7

ISOKINETIC CALCULATIONS													
Run Number		1	2	3	Mean								
Date		6/26/21	6/26/21 🗸	6/26/21									
Time Began		945	1050	1155									
Time Ended		1037	1145	1249									
	INPUT DATA												
Sampling Time, min	(Theta)	48.0	48		48								
Stack Diameter, in.	(Dia.)	66	66	66	66								
Barometric Pressure, in. Hg	(Pb)	29.68	29.68	29.68	29.68								
Static Pressure, in. H2O	(Pg)	-0.30	-0.30	-0.30	-0.30								
Pitot Tube Coefficient	(Cp)	0.84	0.84	0.84	0.84								
Meter Correction Factor	(Y)	1.0030	1.0030	1.0030	1.0030								
Orifice Calibration Value	(Delta H@)	1.8000	1.8000	1.8000	1.8000								
Nozzle Diameter, in.	(Dn)	0.250	0.250	0.250	0.250								
Meter Volume, ft^3	(Vm)	30.393	30.677	30.480	30.517								
Meter Temperature, °F	(Tm)	79.3	86.1		85.8								
Meter Temperature, °R	(Tm-R)	539.3	546.1	552.1	545.8								
Meter Orifice Pressure, in. H2O	(Delta H)	1.300	1.300		1.300								
Ave Sq Rt Orifice Press, (in. H2O) <sup>1</sup> / <sub>2</sub>	((Delta H)½)avg)	1.140	1.140	1.140	1.140								
Volume H2O Collected, mL	(Vlc)	223.0	201.0	210.4	211.5								
CO2 Concentration, %	(CO2)	0.2	0.1	0.2	0.2								
O2 Concentration, %	(O2)	20.2	20.2	20.2	20.2								
Ave Sq Rt Velo Head, (in. H2O) <sup>1</sup> / <sub>2</sub>	((Delta P)½)avg)	1.144	1.122	1.157	1.141								
Stack Temperature, °F	(Ts)	187.7	188.2	189.9	188.6								
Stack Temperature, °R	(Ts-R)	647.7	648.2	649.9	648.6								
Moisture Fraction (at Saturation)	(BWS)	0.610	0.617	0.640	0.622								
	CALCULATED D.	ATA											
Nozzle Area, ft <sup>2</sup>	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04								
Stack Area, ft <sup>2</sup>	(As)	23.76	23.76	23.76	23.76								
Stack Pressure, in. Hg	(Ps)	29.66	29.66	29.66	29.66								
Meter Pressure, in. Hg	(Pm)	29.78	29.78	29.78	29.78								
Standard Meter Volume, ft <sup>3</sup>	(Vmstd)	29.690	29.594	29.084	29.456								
Standard Water Volume, ft <sup>3</sup>	(Vinsta)	10.497	9.461	9.904	9.954								
	(BWS)	0.261	0.242	0.254	0.252								
Moisture Fraction (Measured)	(BWS)	0.261	0.242	0.254	0.252								
Moisture Fraction (lower sat/meas)		28.84	28.82	28.84	28.83								
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	26.01	26.20	26.09	26.10								
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	75.29	73.59	76.12	75.00								
Average Stack Gas Velocity, ft/sec	(Vs)		104899	108506	106908								
Stack Gas Flow, actual, ft <sup>3</sup> /min	(Qa)	107321			64452								
Stack Gas Flow, Std, ft <sup>3</sup> /min	(Qs)	64044	64155	65159	04432								
Calibration check	(Yqa)	1.0230	1.0202	1.0322	1.025								
Percent difference from Y	* * '				2.21%								

ABFOR SIX V

Solition   Catawba, SC	Page 1 of 1	1.	NA	Leak Checks	Initial	100 4	12,72	Good	4	
Method: EPA 4, Moisture	Page		K Factor	Leak		Volume ft <sup>3</sup>	@ Vac. in. Ho	Pitot	IN OI	ole ID run 1
Method: EPA 4, N     Console ID   4σ23     Da, SC   Weter Corr., Y   L.6σ3     Console ΔH@   L.8σσ     Console ΔH@   L.8σσ     Console ID/Length   PRUC - U     Liner Material   55     Probe ID/Length   PRUC - U     Liner Material   55     Thermo ID   Aσ23     Nozzle ID/Diams     Method: EPA 4, N     India		l I	. Hg	. H <sub>2</sub> O	1 7	225.0		6	Ī	Samp
Method	, Moisture	Ambient Temp. 73 °F	Baro. Pressure 29.68 in	Static Pressure 30 in	Impinger Gain 714.7 m	Silica Gel Gain 8. / q		Stack Area 23. 76 ft		Total Traverse Points 16
Indy Da, SC N DExhaust CO 01.008 I NOZZ MIN. Avg. I	Method: EPA 4	onsole ID 4023	er Corr., Y 1.603	sole ∆H@ <b>1,80</b> 0	1D/Length PR6c - 6'	r Material 55	ID/Coeff. 777 0.84	hermo ID Ao23	D/Diams.	
Client New Indy Location/Plant Catawba, SC Source No. 7 Hood Exhaus Sample Location W. O. Number 15730.001.008 Run Number 15730.001.008 Run Number 15730.min.		0			Probe	Line	Pitot		Nozzle I	Avg. Noz
Client Location/Plant Source Sample Location W. O. Number Run Number Run Number Test Personnel	eld Data	New Indy	Catawba, SC	No. 7 Hood Exhaus	Loot	15730.001.008		12/11/9	B541 B2	48 min.
	<b>Isokinetic Fi</b>	Client	Location/Plant	Source	Sample Location	W. O. Number	Run Number	Date	Test Personnel	Sample Time

5:000

Final

COMMENTS																		Vm-std,	O. dscfm	% Isokinetic # 5	lated by	OC by
SAMPLE TRAIN	(in Hg)	7	~	3	n	~	W	3	2	2	2	n	8	N	3	7	~	Max Vac			191.60	1 2 1
IMPINGER	TEMP (°F)	19	51	151	15	21	53	65	55	53	28	99)	62	62	104	57	77	Max Temp	Thermocouple Check	Meter Temp., °F	Ref. Temp, °F	Result
FILTER	TEMP (°F)	W/A	_	1111													7	Min/Max	The	Met	2	
FILTER BOX	TEMP (°F)	252	251	254	250	263	252	254	255	252	282	255	252	254	582	452	156	Min/Max	vrite M3A			
PROBE TEMP (°F)		246	245	544	245	248	244	242	243	242	247	245	242	297	245	242	246	Min/Max Min/Max 747 /948 7 60 /9 <1	by Orsat Fyrite M3A	Leak Check, Pre-run	Post-run	
	) TEMP('F)	76	77	77	28	78	29	29	79	29	80	80	80	20	8	87	87	Avg Tm 79, 2	05/00	Leak Che		
DGM INLET	TEMP (*F)	4/4	1			LKS 1											7		on	20.2	0.2	
S	(4)	190	190	190	189	189	189	188	188	181	187	187	187	187	187	187	187	Avg Ts.	Compositi	%	Carbon Dioxide, %	%
DRY GAS METER READING (ft³)	8.360	10.5	12.2	14.0	15.9	7.71	13.6	21.5	23.4	25.3	27.2	29.2	31.1	33.0	34.9	37.8	38.743	Total Volume	Flue Gas Composition	Oxygen, %	Carbon D	Moisture, %
ORIFICE PRESSURE AM	(in. H <sub>2</sub> O) :	1.3	1.3	1.3	1,3	1.3	1.3	1,3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1,3	1.3	1.300 AH	Avg √∆H	1.1462	Add with	
VELOCITY PRESSURE	(in. H <sub>2</sub> O)	7.7	1.7	1.3	1.3	1.		1.3	1.2	ا- بح	1.5	1.4	1.5	1.5	1.4	1.3	7.7		10161	(1)(2)	ents	
CLOCK TIME (plant time)	09:45																10:37	it port elevation	5	7	NS. Comments	ces
SAMPLE TIME (min)	0	က	9	o	12	15	18	21	24	27	30	33	36	39	42	45	48	Barometric Pressure is at port elevation			SOUDIONS	Integrated Air Services
TRAVERSE POINT NO		A-1	2	က	4	2	9	7	<sub>∞</sub>	B-1	2	က	4	5	9	7	80	*Barome	C.VVI			Integrate

Data Sheets Version 2. Copyright © 2021 by Weston Solutions, Inc.

			pood p		COMMENTS																		V <sub>m-std</sub> ,	Qs, dscfm
Page 1 of 1	Factor N/4 Leak Checks		200 V/	Run 2	SAMPLE TRAIN VACILIM	(in Hg)	7	4	7	8	of	8	8	8	CS	7	7	8	7	7	8	8	Max Vac	
	K H	@ Vac., in. Hg	Pitot ID	Sample ID R	IMPINGER	TEMP (°F)	67	29	57	26	26	75	24	58	9	26	55	56	200	26	22	28	Max Temp/	Thermocouple Check
	lg 20		Filter ID	Samp	FILTER	TEMP (°F)	N/A															7	Min/Max	Th
	30 in. Hg	,		16	FILTER BOX	TEMP (°F)	253	283	269	153	250	182	252	185	253	153	253	252	152	25.3	8259	253	Min/Max 251/255	yrite M3A
	sure* 24.0	. 20 000 000	Area 4.3	rse Points	PROBE TEMP (°F)		247	246	247	242	243	242	192	245	144	242	348	245	242	144	246	243	Min/Max 242/248	by Orsat Fyrite M3A
Method: EPA 4, Moisture	Ambient Temp. 75 Baro. Pressure* 14.08 Static Pressure 130 Impinger Gain 727.6	7000	Stack	Total Traverse Points		) TEMP ('F)	83	83	63	86	80	82	38	386	00	87	87	90	800 800	00	89	83	Avg T <sub>m</sub>	02/00
A 4, N		4		_ inT	DGM	TEMP (*F)	N/A		7													7		200
od: EF	2003	0.84	2	0	STACK	(řF)	188	881	188	189	188	188	631	1880	187	188	188	88/	188	189	183	188	Avg T <sub>s.</sub> 7	ompositi
Meth	7 1.003 1.800 th PRLC- Land	H. P77		n. ,250	DRY GAS METER READING (ft³)	34.009	6.9	is	1.7	7	9	5.5	2.9	1.4		3.2	6.1	0	5	8	.7	66.6810	Total Volume 4	Flue Gas Composition
	Console ID Meter Corr., Y Console AH@ Probe ID/Length Liner Material	Pitot ID/Coeff.	Nozzle ID/Diams.	Avg. Nozzle Diam.			40.	92.8	49.	£.	99	20	52.	54	56.	58.	3	61	63.	65	67.	1	1	>
	Met	Pito	Nozzle	Avg. No.	ORIFICE PRESSURE AH	(in. H <sub>2</sub> O)	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.5	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.360 1.360	Avg VAH
	Indy ba, SC Exhaust 01.008		36	min.	VELOCITY PRESSURE AP	(in. H <sub>2</sub> O)	1.1	1.1	1.1	-	1.1	1.3	رم. ا	1.3	1.5	1,9	1.5	1.4	1.3	1.2	1.3	1.3	Avg VAp	1.7675
d Data	No. 7 Hood Exhaust	1 101.101	1364/	48	CLOCK TIME (plant time)	05:01																1145	it port elevation	5
tic Fiel	Client Location/Plant Source ample Location W. O. Number	Run Number	Test Personnel	Sample Time	SAMPLE TIME . (min)	0	8	9	6	12	15	18	21	24	27	30	33	36	39	42	45	48	*Barometric Pressure is at port elevation	と、作品に
<b>Isokinetic Field Data</b>	Client Location/Plant Source Sample Location W. O. Number	Run	Test Pe	Samp	TRAVERSE POINT NO		A-1	2	3	4	2	9	7	80	B-1	2	3	4	2	9	7	80	*Barome	WIE

Pulo Drier, #8 Paper Machine,
1873.001.008
Pulo Drier, #8 Paper Machine,
#3 SDTVs. & #1-2 CBs
Emaion Report

OC DA

Result

Meter Temp., °F Ref. Temp, °F

Leak Check, Pre-run

Oxygen, % 20, 2

Avg 公子 「**50**2」

1.425

Comments

Integrated Air Services

Oxygen, % Carbon Dioxide, %

Moisture, %

Post-run

0.1

<b>Isokinetic Field</b>	eld Data			Meth	Method: EPA 4, Moisture	14, Mc	isture					Page 1 of 1	
Client Location/Plant	New Indy Catawba, S	ndy a, SC	Console I Meter Corr.,		200	A B	Ambient Temp. Baro. Pressure*	mp. 79	P. in	0	X	Factor 11/4	
Sample Location	No. 7 Hood	7 Hood Exhaust	Console ∆H@ Probe ID/Length	PA	9-	S -	Static Pressure Impinger Gain	37.5	9 1	,O <sub>2</sub>		Leak Checks	Final
Run Number	15/30.001.008	21.008	Pitot ID/Coeff.	55	0.84	ω 	Silica Gel Gain	Sain 6, 2			Volume, ft³ @ Vac., in. Hg	12" Hg	0.000
Test Personnel Sample Time	12 14 12 15 15 15 15 15 15 15 15 15 15 15 15 15	si ca	Nozzle ID/Diams.	704			Stack A	Stack Area 25. /6	16 ft 5	Filter	Pitot	14 Coach	Oceal
	100		Avg. INOZZIE			In. I of	Total Traverse Points	se Points	10	Sample ID		kun 3	
TRAVERSE SAMPLE TIME POINT (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE	ORIFICE PRESSURE	DRY GAS METER READING (ft <sup>3</sup> )	STACK	DGM	DGM	PROBE	FILTER	FILTER	IMPINGER	SAMPLE	
OO.	11:55	(in. H <sub>2</sub> O)	(in: H <sub>2</sub> O)	20.079		TEMP (°F)	TEMP (°F)	TEMP (°F)	TEMP (°F)	TEMP (°F)	TEMP (°F)	VACUUM (in Hg)	
A-1 3		1.1	1.3	71.9	184	K/N	16	245	252	N/A	62	~	
2 6		1.2	(.3	73.8	161		16	245	152	_	58	3	
3		6.2	1.3	7.52	161		16	247	250		56	~	
4 12		1.3	(.)	77.6	761		92	244	255		36	7	
5 15		1.1	(.3	7.5	190		92	243	282		26	8	
6 18		1.1	1.3	81.4	190		46	243	252		57	m	
7 21		4.	(.)	83.2	061		93	241	253		27	8	
8 24		1.4	1.3	85,1	161			142	253		N	N	
B-1 27		1.6	1.3	1.28	187		92	241	256		57	m	
2 30		1.5	[.3	83.0	190		92		252		77	2	
3 33		1.6	1.3	91.0	190		93	242	152		29	2	
4 36		1.5	1.3		161		93		282		69	3	
5 39		50	1.3	34.8	161		32	244	253		lole	3	
6 42		1.5	1.3	2.7	190		92	240	122		20	2	
7 45		1.4	1.3	18.6	161		16	243	152		29	2	
8 48	1249		1.3	106.559	185	>	92		182	>	19	~	
*Barometric Pressure is at port elevation	at port elevation	Avg vAp	1.300 AH	Total Volume	Avg Ts. /	Avg Tm	,	246/247	150/25L	Min/Max	Max Temp	Vac	Vm-std.
WYENT THE	74	1.3438	1.1902 1.1902	Flue Gas Co Oxvgen. %	Flue Gas Composition Oxygen, %	20.5	CO <sub>2</sub>		ite M3A	The	Thermocouple Check	8	
Solitions of Potential	Comments Comments	ents		Carbon Dioxide, %	oxide, %	2.0		Post-run		œ	Ref. Temp, °F	Calculated by	Ag p
illegiated All Services	Security			Moisinie	0,						Result	3	15730. Paper M. Ps. & # Chi sion
245													001.008 Tachine, 1-2 CBs Report

## Sample Recovery Field Data

			Method: EPA	4, Moisture									
	Client	New Indy			Source	No. 7 H	Hood Exha	ust					
Location	n/Plant	Catawba, SC			W.O. Number		30.001.008						
		Imp	oingers 1 - 3 measu	rements in gram	ıs								
Run No.	1		Sample Date	6/26/21	Rec	overy Date	6/26/1	21					
Sample ID				NIA			BEA/D						
			The second secon	mpingers	Total Hall		001/10						
	1	2	3			Imp.Total	Silica Gel	Total					
Contents						44	grams						
Final	928.4	700.8	562.9		Transparent		916.6						
Initial	774.4	669.3	538.5				908.5						
Gain	154	36.5	24.4			214.9	8.1/	223					
lm	pinger Color Co	lear			Labled?	~							
Silica G	Sel Condition 6	oud			Sealed?	_							
					Sealeu!								
Run No.	2		Sample Date	6/26/21	Poor	aveni Dete	6/26/2	, ,					
Sample ID	Market Comments of the Comment				Reco		Commence of the last of the la						
Sample ID	-			N/X mpingers		Analyst	BEA/1.	32					
	1	2	3	Inpringers		Imp.Total	Silica Gel	Total					
Contents						imp. rotar	grams	Total					
Final	900.8	808.5	640.8	THE PERSON NAMED IN			879.4						
Initial	734.5	783.2	637.4				873.4						
Gain	166.3/	29.3 (	3.9	NAME OF THE OWNER, THE		1951	6	2011					
Im	pinger Color 4			A VIIII CAN TANK		113	-	(0)					
						Labled?							
Silica G	el Condition 62	bu .			Seale 1?								
Run No.	3		0 1 5 1	11.1.			11.1						
	3		Sample Date	THE RESERVE OF THE PERSON NAMED IN COLUMN 1997 IN C	Reco		6/26/2						
Sample ID	ace to the angle to a transfer of the			NA		Analyst	BEALG	18					
	1	2	3 In	npingers									
Contents			3			Imp.Total	Silica Gel grams	Total					
Final	131.4	727.2	569.3				No. of Concession, Name of Street, or other						
Initial	780.9	681.7	562.9			40.00	924.8						
	130.5/	45.3	6.4			207.2	916.6	210.4					
	12012	113.2	6.7	A Company of the Comp		707.7	18.24	210.4					

Check COC for Sample IDs of Media Blanks



Labled?

Seale J?



Impinger Color Llcaf

Silica Gel Condition Local

## Sample and Velocity Traverse Point Data Sheet - Method 19 15730,001,008 Paper Machine, 1823 SDTVs, & #1-2 CBs Emission Report

Clien	ıt	New Indy	_	Operator	VD / LF
Loaction/Plan	ıt	Catawba, SC	_	Date	15-Jun-21
Source	e	No. 7 Hood Exhaust	_	W.0. Number	15730.001.008
Duct Type	<b>V</b>	Circular		Rectangular Duct	Indicate appropriate type
Traverse Type		Particulate Traverse	1	Velocity Traverse	

Distance from far wall to outside of port (in.) = C	66.125
Port Depth (in.) = D	0.125
Depth of Duct, diameter (in.) = C-D	66
Area of Duct (ft²)	23.76
Total Traverse Points	16
Total Traverse Points per Port	8

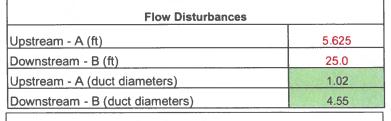
Rectangular Ducts Only	
Width of Duct, rectangular duct only (in.)	
Total Ports (rectangular duct only)	

	Trav	verse Point Loc	ations
Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	3.2	2	2
2	10.5	7	7
3	19.4	13	13
4	32.3	21 1/2	21 1/2
5	67.7	44 1/2	45
6	80.6	53	53 1/2
7	89.5	59	59
8	96.8	64	64
9			
10			
11			
12			

Equivalent Diameter = (2\*L\*W)/(L+W)

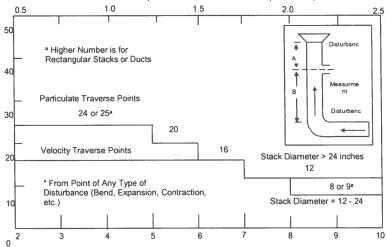
			Trave	rse Poi	nt Loc	ation P	ercer	nt of Sta	ick -C	ircular		
					Numb	er of Tra	verse	Points				
	1	2	3	4	5	6	7	8	9	10	11	12
1		14.6		6.7		4.4		3.2		2.6		2.1
2	SP SIE	85.4	1500	25		14.6	1105	10.5	hiest	8.2	NOTE:	6.7
3				75		29.6		19.4		14.6		11.8
4			y my	93.3		70.4	- ALIAN	32.3	Pigg	22.6	12/3	17.7
5						85.4		67.7		34.2		25
6		E 18%	N B		NEW YORK	95.6		80.6		65.8	May 1	35.6
7								89.5		77.4		64.4
8	1	ELE!	72.12	200	100	2150		96.8		85.4	1 11/2	75
9										91.8		82.3
10		No.		1			esut)		A THE	97.4	A. Cup	88.2
11												93.3
12	-10/6		7.LEV	750	2353	246	1 34	May.	902	La mar		97.9

Port Diam. (in) =	4
Number of Ports =	2



Duct Diameters Upstream from Flow Disturbance\* (Distance A)

1.0
1.5
2.0
2.5



Duct Diameters Downstream from Flow Disturbance\* (Distance B)

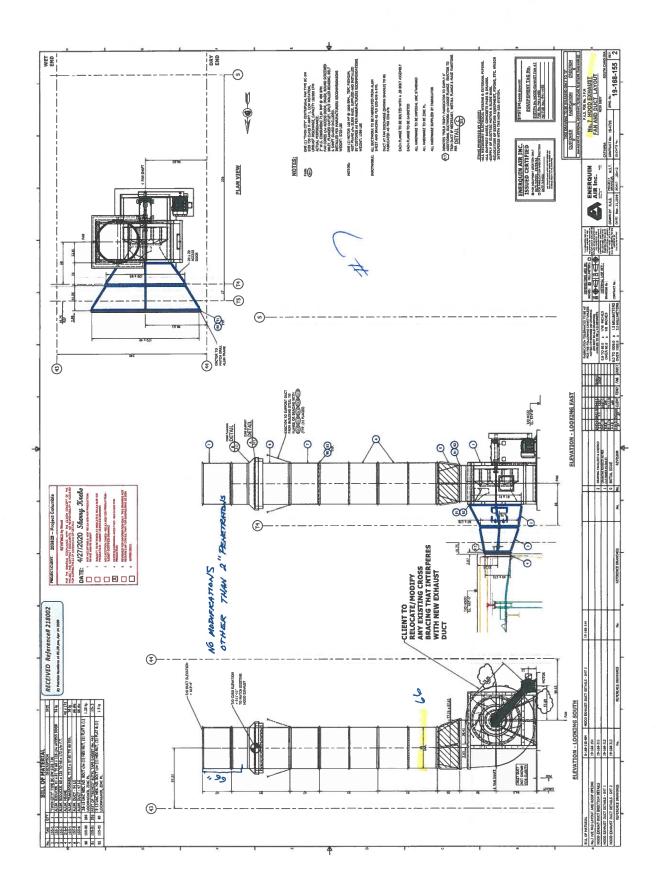
	Γ		Tra	averse	Point	Locati	on Pe	rcent o	f Stacl	k -Rect	angula	ar	
						Numbe	r of Tra	verse	Points				
	Γ	1	2	3	4	5	6	7	8	9	10	11	12
1	Т		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2			75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
3	П			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4		1874		430	87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
5	; ]					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
6	5	13.0	100		THE W	7353	91.7	78.6	68.8	61.1	55.0	50.0	45.8
7	7							92.9	81.3	72.2	65.0	59.1	54.2
8	3	15.8	136.31	1157.34		31/3/	1 1	MILE	93.8	83.3	75.0	68.2	62.5
, ,	7									94.4	85.0	77.3	70.8
_	0	74			(SOT		5 6	XX.	15 2		95.0	86.4	79.2
1	1										1	95.5	87.5
T	2		1000		24 11			10/73/3			11/23		95.8

Stac	k	٢	01	nts	
&	M	a	tri.	X	
9	-	3	Х	3	
12	-	4	Χ	3	
16	-	4	Χ	4	
20	-	5	Х	4	
25	-	5	Х	5	
30	-	6	Х	5	
36	-	6	Х	6	
42	-	7	Х	6	
49	-	7	Х	7	
	_				_

Rectangular

Tape Measure I.D. #

M-07



Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 7

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 26 Jun 2021

Start Time 09:45

**End Time 10:46** 

Average Measured TRS Conc.

Recovery No. 2

**TRS Corrected for Recovery** 

0.45 0.39 ppm 93.9 %

0,42 ppm

8112a

9115

Number 2

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 7

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

Date: 26 Jun 2021

Start Time 10:50

**End Time** 11:50

**Average Measured TRS Conc.** 

Recovery No. 2

**TRS Corrected for Recovery** 

0.47 0.40 ppm 93.9 %

0,43 ppm

2470.50 RAILS/

Number 3

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 7

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 26 Jun 2021

Start Time 11:55

**End Time 12:55** 

**Average Measured TRS Conc.** 

Recovery No. 2

**TRS Corrected for Recovery** 

0.50 0.55 0.49 ppm

93.9 %

0,52 ppm

Sel Se

RAIS

Number 1

			ŀ																						
			TRS	mdd	0.39	0.37	0.53	0.43	0.32	0.68	0.64	0.50	0.42	0.51	0.64	0.30	0.28	0.45	0.54	0.35	0.40	0.45	0.48	0.41	0.45
1.008		121		V		0.017		0.017	0.017				0.017	0.017				0.017		0.017	0.017	0.017			
15730.001.008	ΛD	26 Jun 2021	DMDS	ppm	0.04		0.02			90.0	0.14	0.03			0.08	0.07	0.07		0.08				0.02	90.0	
lumber:	Operator:	Date:		area	16	7	2	<b>7</b>	7	27	117	9	<b>~</b>	<b>%</b>	45	34	32	<b>%</b>	42	<b>%</b>	<b>~</b>	<b>~</b>	2	26	
Project Number:	ō			V					0.054							0.054	0.054			0.054					
			DMS	ppm	0.14	0.11	0.24	0.25		0.29	0.26	0.22	0.29	0.17	0.17			0.33	0.26		0.17	0.19	0.15	0.12	
	G	-		area	15	10	39	39	<2	52	43	32	54	21	21	<2	<2	64	43	7	22	24	16	12	
	Method: 16	Calibration:		V	0.054						0.054	0.054	0.054		0.054	0.054	0.054	0.054	0.054						
	2	Ö	MeSH	ppm		0.08	0.09	0.08	0.09	0.12				0.13						0.22	0.15	0.10	0.15	0.13	
				area	<2 2	9	∞	9	7	12	<2	<b>~</b>	7	4	<b>~</b>	<b>~</b>	<2	7	<b>~</b>	33	48	∞	17	13	
					0.11	0.14	0.14	0.07	0.14	0.15	0.04	0.16	0.04	0.17	0.26	0.05	0.04	0.04	0.07	0.05	0.04	0.13	0.14	0.04	0.10
		ent 7	H <sub>2</sub> S	v							0.037		0.037				0.037	0.037			0.037			0.037	
<u>&gt;</u>	a, SC	Paper Machine Vent 7	Ť	mdd	0.11	0.14	0.14	0.07	0.14	0.15		0.16		0.17	0.26	0.05			0.07	0.05		0.13	0.14		
New Indy	Catawba, SC	Paper M		area	17	56	27	တ	56	59	<b>%</b>	32	<b>%</b>	36	20	2	<b>%</b>	7	7	4	<b>%</b>	22	24	<2	
Client:	Location:	Source:		Time	09:45	09:48	09:51	09:54	09:57	10:00	10:03	10:06	10:09	10:12	10:15	10:18	10:22	10:25	10:28	10:31	10:34	10:37	10:40	10:43	Averages

			TRS	ppm	0.76	0.23	0.46	0.34	0.59	0.50	0.54	0.36	0.58	0.42	0.35	0.31	0.49	0.22	0.64	0.52	0.31	0.53	0.81	0.46	0.47
1.008		121		v		0.017		0.017	0.017		0.017				0.017					0.017					
15730.001.008	ΛD	26 Jun 2021	DMDS	mdd	0.05		90.0			0.12		0.08	90.0	0.09		0.03	90.0	0.03	0.05		90.0	0.04	0.07	0.05	
lumber:	Operator:	Date:		area	21	<b>~</b>	25	<b>%</b>	<b>~</b>	95	<b>~</b>	41	59	22	<b>~</b>	10	27	7	17	<b>~</b>	56	13	38	18	
Project Number:	Ō			v		0.054						0.054	0.054			0.054		0.054		0.054	0.054				
			DMS	ppm	0.24		0.14	0.21	0.10	0.16	0.27			0.15	0.22		0.18		0.21			0.20	0.40	0.19	
	"	1		area	38	<2	15	30	တ	18	46	<b>%</b>	<b>~</b>	17	33	<b>~</b>	24	<2	30	<2	<b>~</b>	28	06	25	
	Method: 16	Calibration: 1		v		0.054		0.054		0.054				0.054	0.054	0.054		0.054			0.054			0.054	
	2	Ö	MeSH	mdd	0.25		0.14		0.25		0.17	0.09	0.22				0.14		0.11	0.39		0.22	0.18		
				area	41	<2	15	<b>%</b>	41	7	21	7	33	<b>~</b>	<2	<b>~</b>	16	7	10	95	<2	33	23	<2	
					0.17	0.09	0.07	0.04	0.21	0.04	0.08	0.05	0.19	0.04	0.04	0.13	0.04	0.05	0.23	0.04	0.09	0.04	0.09	0.12	60.0
		ent 7	S	v				0.037		0.037				0.037	0.037		0.037			0.037		0.037			
<u>&gt;</u>	a, SC	Paper Machine Vent 7	H <sub>2</sub> S	mdd	0.17	0.09	0.07		0.21		0.08	0.05	0.19			0.13		0.05	0.23		0.09		0.09	0.12	
New Indy	Catawba, SC	Paper M		area	34	13	∞	<b>~</b>	48	<b>~</b>	တ	2	41	<b>~</b>	<b>~</b>	23	7	2	22	7	7	<b>~</b>	13	20	
Client:	Location:	Source:		Time	10:50	10:53	10:56	10:59	11:02	11:05	11:08	11:11	11:14	11:17	11:20	11:23	11:26	11:29	11:32	11:35	11:38	11:41	11:44	11:47	Averages

			TRS	ppm	0.38	0.52	0.41	0.49	0.64	0.57	0.36	0.95	0.47	0.40	0.28	0.73	0.70	0.51	0.84	0.81	0.29	0.70	0.37	0.55	0.55
1.008		121		<b>v</b>	0.017		0.017		0.017	0.017	0.017	0.017		0.017	0.017	0.017	0.017						0.017		
15730.001.008	ΛD	26 Jun 2021	DMDS	ppm		0.05		0.04					0.05					90.0	0.04	0.03	0.04	0.07		0.04	
lumber:	Operator:	Date:		area	<2	21	<b>4</b>	16	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	22	<b>~</b>	<b>~</b>	<2	<b>~</b>	56	12	တ	13	39	<2	11	
Project Number:	Ō			<b>v</b>	0.054		0.054								0.054							0.054	0.054		
			DMS	ppm		0.15		0.09	0.16	0.35	0.16	0.61	0.12	0.15		0.19	0.34	0.14	0.35	0.19	0.12			0.12	
		1		area	<b>~</b>	17	<b>~</b>	7	19	72	18	191	7	16	<b>~</b>	56	69	15	72	56	12	<b>~</b>	<b>~</b>	12	
	Method: 16	Calibration: 1		v				0.054			0.054	0.054	0.054				0.054				0.054				
	2	Ö	MeSH	mdd	0.26	0.07	0.22		0.22	0.15				0.11	0.16	0.37		0.16	0.22	0.31		0.20	0.07	0.28	
				area	4	2	8	<b>%</b>	33	8	<b>%</b>	7	7	10	19	83	<b>~</b>	20	33	62	<b>%</b>	28	4	51	
					0.04	0.19	0.10	0.25	0.23	0.04	0.11	0.25	0.18	0.11	0.04	0.13	0.27	0.09	0.20	0.24	0.04	0.30	0.22	0.08	0.16
		ent 7	H <sub>2</sub> S	v	0.037					0.037					0.037						0.037				
>	a, SC	Paper Machine Vent 7	Ι	mdd		0.19	0.10	0.25	0.23		0.11	0.25	0.18	0.11		0.13	0.27	0.09	0.20	0.24		0.30	0.22	0.08	
New Indy	Catawba, SC	Paper M		area	<b>~</b>	42	4	89	22	<b>%</b>	48	89	40	16	7	23	9/	12	46	62	\$	87	53	10	
Client:	Location:	Source:		Time	11:55	11:58	12:01	12:04	12:07	12:10	12:13	12:16	12:19	12:22	12:25	12:28	12:31	12:34	12:37	12:40	12:43	12:46	12:49	12:52	Averages

Number 1

Client: New Indy

Location: Catawba, SC
Source: Paper Machine Vent 7

Method 16 Calibration 1 Project Number: 15730.001.008 Operator: VD

Time		<sub>2</sub> S		SH		MS		IDS	TRS
 	area	ppm	area	ppm	area	ppm	area	ppm	ppm
09:45	17	0.11	<2	<0.05	15	0.14	16	0.04	0.34
09:48	26	0.14	6	0.08	10	0.11	<2	< 0.02	0.34
09:51	27	0.14	8	0.09	39	0.24	5	0.02	0.53
09:54	9	0.07	6	0.08	39	0.25	<2	< 0.02	0.40
09:57	26	0.14	7	0.09	<2	< 0.05	<2	< 0.02	0.23
10:00	29	0.15	12	0.12	52	0.29	27	0.06	0.68
10:03	<2	< 0.04	<2	< 0.05	43	0.26	117	0.14	0.55
10:06	32	0.16	<2	< 0.05	32	0.22	10	0.03	0.45
10:09	<2	< 0.04	<2	< 0.05	54	0.29	<2	< 0.02	0.29
10:12	36	0.17	14	0.13	21	0.17	<2	< 0.02	0.47
10:15	70	0.26	<2	< 0.05	21	0.17	45	0.08	0.59
10:18	5	0.05	<2	< 0.05	<2	< 0.05	34	0.07	0.19
10:22	<2	< 0.04	<2	< 0.05	<2	< 0.05	32	0.07	0.13
10:25	<2	< 0.04	<2	< 0.05	64	0.33	<2	< 0.02	0.33
10:28	7	0.07	<2	< 0.05	43	0.26	42	0.08	0.48
10:31	4	0.05	33	0.22	<2	< 0.05	<2	< 0.02	0.26
10:34	<2	< 0.04	18	0.15	22	0.17	<2	< 0.02	0.33
10:37	22	0.13	8	0.10	24	0.19	<2	< 0.02	0.41
10:40	24	0.14	17	0.15	16	0.15	5	0.02	0.48
10:43	<2	<0.04	13	0.13	12	0.12	26	0.06	0.37
Average		0.09		0.07		0.17		0.03	0.39





Number 2

Client: New Indy Location: Catawba, SC

Source: Paper Machine Vent 7

Method 16 Calibration 1 Project Number: 15730.001.008 Operator: VD

Time	H area	l₂S ppm	Me area	SH ppm	Di area	MS ppm	DN area	IDS ppm	TRS ppm
10:50	34	0.17	41	0.25	38	0.24	21	0.05	0.76
10:53	13	0.09	<2	< 0.05	<2	< 0.05	<2	<0.02	0.09
10:56	8	0.07	15	0.14	15	0.14	25	0.06	0.46
10:59	<2	< 0.04	<2	< 0.05	30	0.21	<2	< 0.02	0.21
11:02	48	0.21	41	0.25	9	0.10	<2	< 0.02	0.55
11:05	<2	< 0.04	<2	< 0.05	18	0.16	92	0.12	0.41
11:08	9	0.08	21	0.17	46	0.27	<2	< 0.02	0.51
11:11	5	0.05	7	0.09	<2	< 0.05	41	0.08	0.30
11:14	41	0.19	33	0.22	<2	< 0.05	29	0.06	0.53
11:17	<2	< 0.04	<2	< 0.05	17	0.15	55	0.09	0.33
11:20	<2	< 0.04	<2	< 0.05	33	0.22	<2	< 0.02	0.22
11:23	23	0.13	<2	< 0.05	<2	< 0.05	10	0.03	0.20
11:26	<2	< 0.04	16	0.14	24	0.18	27	0.06	0.45
11:29	5	0.05	<2	< 0.05	<2	< 0.05	7	0.03	0.11
11:32	57	0.23	10	0.11	30	0.21	17	0.05	0.64
11:35,	<2	< 0.04	92	0.39	<2	< 0.05	<2	< 0.02	0.39
11:38	11	0.09	<2	< 0.05	<2	< 0.05	26	0.06	0.20
11:41	<2	<0.04	33	0.22	28	0.20	13	0.04	0.49
11:44	13	0.09	23	0.18	90	0.40	38	0.07	0.81
11:47	20	0.12	<2	<0.05	25	0.19	18	0.05	0.40
Average		0.08		0.11		0.13		0.04	0.40 -





Number 3

Client: New Indy Location: Catawba, SC

Source: Paper Machine Vent 7

Method 16 Calibration 1 Project Number: **15730.001.008**Operator: **VD** 

Time	H area	₂S ppm	Me area	SH ppm	Di area	MS ppm	DN area	IDS ppm	TRS ppm
11:55	<2	<0.04	44	0.26	<2	<0.05	<2	<0.02	0.26
11:58	42	0.19	5	0.07	17	0.15	21	0.05	0.52
12:01	14	0.10	34	0.22	<2	< 0.05	<2	< 0.02	0.32
12:04	68	0.25	<2	< 0.05	7	0.09	16	0.04	0.43
12:07	57	0.23	33	0.22	19	0.16	<2	< 0.02	0.61
12:10	<2	< 0.04	18	0.15	72	0.35	<2	< 0.02	0.50
12:13	18	0.11	<2	< 0.05	18	0.16	<2	< 0.02	0.27
12:16	68	0.25	<2	< 0.05	191	0.61	<2	< 0.02	0.86
12:19	40	0.18	<2	< 0.05	11	0.12	22	0.05	0.41
12:22	16	0.11	10	0.11	16	0.15	<2	< 0.02	0.36
12:25	<2	< 0.04	19	0.16	<2	< 0.05	<2	< 0.02	0.16
12:28	23	0.13	83	0.37	26	0.19	<2	< 0.02	0.69
12:31	76	0.27	<2	< 0.05	69	0.34	<2	< 0.02	0.61
12:34	12	0.09	20	0.16	15	0.14	26	0.06	0.51
12:37	46	0.20	33	0.22	72	0.35	12	0.04	0.84
12:40	62	0.24	62	0.31	26	0.19	9	0.03	0.81
12:43	<2	< 0.04	<2	< 0.05	12	0.12	13	0.04	0.20
12:46	87	0.30	28	0.20	<2	< 0.05	39	0.07	0.64
12:49	53	0.22	4	0.07	<2	< 0.05	<2	< 0.02	0.29
12:52	10	0.08	51	0.28	12	0.12	11	0.04	0.55
Average		0.15		0.14		0.16		0.02	0.49





#### **RECOVERY DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Method 16

Project Number: 15730.001.008

Operator: VD

Date: 26 Jun 2021

Source: Paper Machine Vent 7

Calibration 1

Before Run 1

Start Time 08:19

**End Time** 08:31

Recovery Gas to Probe, Time 08:19

Peak Areas, mv-sec

15757

15082

15526

Average

ppm

15455 6.94

Recovery Gas to GC, Time 08:27

Peak Areas, mv-sec

17789

17071 17094

Average

ppm

17318 7.43

Recovery 93.3%



SK



#### **RECOVERY DATA**

Number 2

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 7

Method 16

Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 26 Jun 2021

After Run 3 Before Run 4

Start Time 12:55

**End Time** 13:09

**Recovery Gas to Probe, Time 12:55** 

Peak Areas, mv-sec

16925

16900

17033

Average

ppm

16953 7.34

Recovery Gas to GC, Time 13:06

Peak Areas, mv-sec

18883

18581

18955

Average

ppm

18807

7.82

Recovery 93.9%

SA

### **CALIBRATION DATA**

Number 1

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 7

Method 16

Project Number: 15730.001.008

Operator: VD

Ambie	nt Temperature: 72°C		Pressure: 29.70 in.	_
Analyte	H₂S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	460	457	298	232
Ret. Time, seç	25.0	35.0	63.0	132.0
1 Flow = 48.0 mL/Min	<b>9.58</b> ppm	<b>9.52</b> ppm	<b>6.20</b> ppm	<b>4.83</b> ppm
Time: 07:01		Peak Area	ıs, mv-sec	
	25119	23385	10987	48706
	25616	23496	10706	47186
	25021	22672	10690	48066
Average Area	25252	23184	10794	47986
2 Flow = 81.6 mL/Min	<b>5.64</b> ppm	<b>5.60</b> ppm	<b>3.65</b> ppm	<b>2.84</b> ppm
Time: 07:34		Peak Area	is, mv-sec	2
	11971	9531	4072	19617
	11666	9535	4189	19344
	11820	9242	4068	20012
Average Area	11819	9436	4110	19658
3 Flow = 151 mL/Min	<b>3.05</b> ppm	<b>3.02</b> ppm	<b>1.97</b> ppm	<b>1.54</b> ppm
Time: 07:49		Peak Area	is, mv-sec	
	3892	3195	1507	6761
	3898	3136	1468	6767
	3818	3182	1462	6752
Average Area	3869	3171	1479	6760



#### **CALIBRATION SUMMARY**

Number 1

Client: New Indy

Project Number: 15730.001.008

Date: 25 Jun 2021

Location: Catawba, SC

Operator: VD

Source: Paper Machine Vent 7

Method 16

	•					
H₂S	1	2	3.			
Time	07:01	07:34	07:49			
Concentration, ppm	9.58	5.64	3.05			
Area, mv-sec	25252	11819	3869			
Calc. Conc., ppm	9.36	5.89	2.98			
% Error	-2.4	4.5	-2.0			
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.	
	1.6414	2.8084	0.9978	2	0.04	
MeSH	1	2	3			
Time	07:01	07:34	07:49			
Concentration, ppm	9.52	5.60	3.02			
Area, mv-sec	23184	9436	3171			
Calc. Conc., ppm	9.47	5.65	3.01			
% Error	-0.5	0.9	-0.4			
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.7368	2.6693	0.9999	2	0.05	
DMS	1	2	3			
Time	07:01	07:34	07:49			
Concentration, ppm	6.20	3.65	1.97			
Area, mv-sec	10794	4110	1479			
Calc. Conc., ppm	6.26	3.59	1.99			
% Error	0.9	-1.7	0.8			
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.7325	2.6531	0.9997	2	0.05	×
DMDS	1	2	3			
Time	07:01	07:34	07:49			
Concentration, ppm	4.83	2.84	1.54			
Area, mv-sec	47986	19658	6760			
Calc. Conc., ppm	4.82	2.86	1.53			
% Error	-0.3	0.6	-0.3			
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.	
	1.7107	3.5133	>0.9999	2	0.02	

#### **CALIBRATION DATA**

Number 2

Method 16

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 7

Project Number: **15730.001.008**Operator: **VD** 

Date: 26 Jun 2021

Ambient	Temperature: 72°C	Barometric F	Pressure: 29.70 in.	
Analyte	H₂S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	460	457	298	232
Ret. Time, sec	25.0	35.0	63.0	132.0
1 Flow = 48.0 mL/Min	<b>9.58</b> ppm	<b>9.52</b> ppm	<b>6.20</b> ppm	<b>4.83</b> ppm
Time: 16:36		Peak Area	is, mv-sec	
	26011	25303	11444	51862
	26531	26149	12036	53970
	27302	26754	12114	53372
Average Area	26615	26069	11864 🖊	53068
2 Flow = 88.9 mL/Min	<b>5.17</b> ppm	<b>5.14</b> ppm	<b>3.35</b> ppm	<b>2.61</b> ppm
Time: 16:50		Peak Area	as, mv-sec	
	9447	7596	3066	16100
	9456	7369	3124	14977
	9570	7546	3109	14905
Average Area	9491	7504 /	3100	15327
3 Flow = 133 mL/Min	<b>3.45</b> ppm	<b>3.43</b> ppm	<b>2.23</b> ppm	<b>1.74</b> ppm
Time: 17:14		Peak Area	as, mv-sec	
	4013	3384	1323	6743
	4015	3427	1344	6741
	3979	3463	1344	6769
Average Area	4002	3425	1337	6751

SH

## **CALIBRATION SUMMARY**

Number 2

Method 16

Client: New Indy Location: Catawba, SC

Source: Paper Machine Vent 7

Project Number: 15730.001.008

Operator: **VD** 

Date: 26 Jun 2021

•					
H <sub>2</sub> S	1	2	3		
Time	16:36	16:50	17:14		
Concentration, ppm	9.58	5.17	3.45		
Area, mv-sec	26615	9491	4002		
Calc. Conc., ppm	9.43	5.38	3.37		
% Error	-1.6	4.1	-2.4		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8396	2.6323	0.9977	2	0.05
MeSH	1	2	3		
Time	16:36	16:50	17:14		
Concentration, ppm	9.52	5.14	3.43		
Area, mv-sec	26069	7504	3425		
Calc. Conc., ppm	9.54	5.10	3.44		
% Error	0.3	-0.7	0.4		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9895	2.4671	0.9999	2	0.08
DMS	1	2	3		
Time	16:36	16:50	17:14		
Concentration, ppm	6.20	3.35	2.23		
Area, mv-sec	11864	3100	1337		
Calc. Conc., ppm	6.22	3.32	2.24		ε.
% Error	0.3	-0.8	0.5		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
•	2.1400	2.3753	0.9999	2	0.11
DMDS	1	2	3		
Time	16:36	16:50	17:14		
	4.83	2.61	1.74		
Concentration, ppm	53068	15327	6751		
Area, mv-sec	4.83	2.61	1.74		
Calc. Conc., ppm	4.83 -0.0	0.1	-0.0		
% Error				Min Augs	Det. Lim.
Calibration Curve	Slope	Intercept		Min. Area	
	2.0180	3.3447	>0.9999	2	0.03

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#### **ANALYTES AND STANDARDS**

Client: New Indy Project Number: 15730.001.008

Location: Catawba, SC Operator: VD

Source: Paper Machine Vent 7 Method 16 Date: 25 Jun 2021

Analyte Molecular Weight	<b>H₂S</b> 34.08	<b>MeSH</b> 48.11	<b>DMS</b> 62.14	<b>DMDS</b> 94.20
Retention Time, sec Peak Detection Window, sec Minimum Peak Area, mv-sec Minimum Peak Height, mv Beginning Peak Width, sec Ending Peak Width, sec	25.0	35.0	63.0	132.0
	10.0	10.0	10.0	10.0
	2	2	2	2
	1	1	1	1
	1.0	1.0	3.0	3.0
	2.0	3.0	5.0	5.0
Permeation Device ID Permeation Rate, ng/min Permeation Rate, nL/min*	T-51831	33-50536	89-50725	89-53405
	642	901 /	758	895
	460	457	298	232

Barometric Pressure: 29.70 in. Hg Ambient Temperature: 72 °F

No Oxygen Correction

 $PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^{\circ} + T_a) / T_s] \times (P_s / P_b)$ 

Where:

PR<sub>nl</sub> = Permeation Rate by volume, nL/minPR<sub>ng</sub> = Permeation Rate by weight, ng/min

V<sub>mol</sub> = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

 $W_{mol}$  = Molecular Weight of compound

T<sub>a</sub> = Ambient Temperature, °F

T<sub>s</sub> = Standard Temperature = 492°R (32 °F)

P<sub>s</sub> = Standard Pressure = 29.92 in Hg

P<sub>b</sub> = Barometric Pressure, in Hg

For example, H<sub>2</sub>S:

PR<sub>nl</sub> = 642 x (22.4 / 34.08) x [(460 + 72) / 492] x (29.92 / 29.70) = 460 nL/min

To calclate concentrations:

 $C = PR_{nl} / F_{d}$ 

Where:

**C** = Concentration, ppmv

**PR**<sub>nl</sub> = Permeation Rate by volume, nL/min

F<sub>d</sub> = Flow rate of diluent, mL/min

<sup>\*</sup>Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min. Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

#### **INSTRUMENT INFORMATION**

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 7

Method 16

Project Number: 15730.001.008

Operator: VD

Date: 25 Jun 2021

File: E:\6-26-21.trs

Program Version: 2.0, built 21 Feb 2015 File

Computer: JWS-PROGRAMMING Tra

File Version: 2.0

Trailer: 271

Analog Input Device: Keithley KUSB-3108

GC Channel: 16

Sampling Rate: 0.050 sec.

Data Interval: 0.5 sec.

Gas Chromatograph: GC-8A Serial No. C10494419420SA

**Detector Range: 10** 

2	Gases			Temperatur	es, °C	Columns
	Press.	Flow mL/min	_	Column:	100	Primary: 3'
$H_2$	30	50		<b>Detector:</b>	120	Secondary:
Air	30	60				Sample Loop: 6" unlined
Carrier	50	30				

#### **Injection Cycle**

Total Length: 180 sec Sampling Time: 160 sec Load/Backflush Time: 85 sec

#### **Default Integration Parameters**

Signal Threshold 0.67 mv Peak detection window ±10 sec

Minimum peak area 5 mv-sec Minimum peak height 5 mv above baseline

#### **Dynacalibrator**

Chamber Temperature 130.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.70 in. Hg

Number 7

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent 7

Method 16 Calibration 1 Project Number: **15730.001.008**Operator: **VD**Date: **26 Jun 2021** 

Time	H <sub>2</sub>	S	Me	SH	DI	MS	DN	IDS	TRS
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
17:44	18765	7.81	<2	<0.05	<2	<0.05	<2	<0.02	7.81
17:47	19416	7.97	<2	< 0.05	<2	< 0.05	<2	< 0.02	7.97
17:50	18473	7.73	<2	< 0.05	<2	< 0.05	<2	< 0.02	7.73
17:53	18357	7.70	<2	<0.05	<2	<0.05	<2	<0.02	7.70
Average		7.80		<0.05		<0.05		<0.02	7.80





Number 1

Calibration 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 7

Project Number: 15730.001.008

Operator: **VD** 

···	T:	0	2	C	O <sub>2</sub>
	Time	mv	%	mv	%
	10:49:55	6772	20.2	-2	0.2
	10:50:10	6774	20.2	-2	0.2
	10:50:25	6773	20.2	-3	0.2
	10:50:40	6772	20.2	-2	0.2
	10:50:55	6773	20.2	-2	0.2
	10:51:10	6773	20.2	-3	0.2
	10:51:25	6774	20.2	-2	0.2
	10:51:40	6771	20.2	-2	0.2
	10:51:55	6771	20.2	-2	0.2
	10:52:10	6774	20.2	-3	0.2
	10:52:25	6773	20.2	-2	0.2
	10:52:40	6772	20.2	-2	0.2
	10:52:55	6773	20.2	-3	0.2
	10:53:10	6774	20.2	-2	0.2
	10:53:25	6774	20.2	-2	0.2
	10:53:40	6773	20.2	-2	0.2
	10:53:55	6774	20.2	-3	0.2
	10:54:10	6773	20.2	-3	0.2
	Avgs	6773	20.2	-2	0.2

Number 2

Calibration 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 7

Project Number: 15730.001.008

Operator: **VD** 

Timo	0	2	CC	) <sub>2</sub>
Time	mv	%	mv	%
 12:01:12	6774	20.2	-2	0.2
12:01:27	6773	20.2	-4	0.1
12:01:42	6773	20.2	-3	0.2
12:01:57	6772	20.2	-4	0.1
12:02:12	6773	20.2	-5	0.1
12:02:27	6772	20.2	-4	0.1
12:02:42	6773	20.2	-5	0.1
12:02:57	6772	20.2	-5	0.1
12:03:12	6772	20.2	-5	0.1
12:03:27	6772	20.2	-5	0.1
12:03:42	6772	20.2	-5	0.1
12:03:57	6772	20.2	-4	0.1
12:04:12	6772	20.2	-5	0.1
12:04:27	6773	20.2	-4	0.1
12:04:42	6773	20.2	-5	0.1
12:04:57	6771	20.2	-5	0.1
12:05:12	6772	20.2	-6	0.1
Avgs	6772	20.2	-4	0.1

Number 3

Calibration 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 7

Project Number: 15730.001.008

Operator: **VD** 

Time	0	2	C	) <sub>2</sub>
Time	mv	%	mv	%
13:04:58	6768	20.2	-3	0.2
13:05:13	6768	20.2	-3	0.2
13:05:28	6767	20.2	-2	0.2
13:05:43	6768	20.2	-3	0.2
13:05:58	6768	20.2	-2	0.2
13:06:13	6768	20.2	-2	0.2
13:06:28	6768	20.2	-4	0.1
13:06:43	6768	20.2	-3	0.2
13:06:58	6769	20.2	-3	0.2
13:07:13	6768	20.2	-3	0.2
13:07:28	6769	20.2	-4	0.1
13:07:43	6770	20.2	-5	0.1
13:07:58	6767	20.2	-3	0.2
13:08:13	6767	20.2	-2	0.2
13:08:28	6769	20.2	-2	0.2
13:08:43	6768	20.2	-4	0.1
13:08:58	6768	20.2	-3	0.2
Avgs	6768	20.2	-3	0.2

#### **CALIBRATION DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 7

Project Number: 15730.001.008

Operator: **VD** 

Date: 26 Jun 2021

Start Time: 08:07

 $O_2$ 

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

 %
 Cylinder ID
 Result, mv

 Zero
 8

 10.1
 SG9168283BAL
 3293

 19.5
 CC454190
 6574

**Curve Coefficients** 

Slope Intercept 336.6 -29

Corr. Coeff.

0.9998

CO<sub>2</sub>

Method: EPA 3A

Calibration Type: Linear Regression

**Calibration Results** 

 %
 Cylinder ID
 Result, mv

 Zero
 -32

 10.2
 SG9168283BAL
 3417

 20.4
 CC454190
 7035

**Curve Coefficients** 

Slope Intercept 346.4 -56

**Corr. Coeff.** 0.9999

#### **CALIBRATION ERROR DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 7

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 26 Jun 2021

Start Time: 08:07

 $O_2$ 

Method: EPA 3A Span Conc. 19.5 %

**Slope** 336.6

Intercept -29.2

Standard % Zero	Response mv 8	Result % 0.1	Difference % 0.1	<b>Error</b> % 0.5 _/	Status Pass
10.1	3293	9.9	-0.2	-1.0	Pass
19.5	6574	19.6	0.1	0.5	Pass

CO<sub>2</sub>

Method: EPA 3A Span Conc. 20.4 %

**Slope** 346.4

Intercept -55.6

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	-32	0.1	0.1	0.5	Pass
10.2	3417	10.0	-0.2	-1.0	Pass
20.4	7035	20.5	0.1	0.5	Pass



#### METHODS AND ANALYZERS

Client: New Indy

Project Number: 15730.001.008

Operator: **VD** 

Location: Catawba, SC Source: Paper Machine vent 7

Date: 26 Jun 2021

File: C:\Users\Trailer 271\Documents\New Indy\6-26-21.cem Program Version: 2.2, built 3 Jul 2020 File Version: 2.04

Computer: DESKTOP-GQ0I9UV Trailer: 271 Analog Input Device: Keithley KUSB-3108

**Channel 1** 

Analyte  $O_2$ 

EPA 3A, Using Bias Method Analyzer Make, Model & Serial No. CAI 600 SN E07015-M

Full-Scale Output, mv 10000 Analyzer Range, % 20.0 Span Concentration, % 19.5

Channel 2

**Analyte**  $CO_2$ 

Method EPA 3A, Using Bias Analyzer Make, Model & Serial No. CAI 600 SN E07015-M

Full-Scale Output, mv 10000 Analyzer Range, % 25.0 Span Concentration, % 20.4



### APPENDIX D

### VENT 8

New Indy Catawba, SC 15730.001.008 No. 8 Hood Exhaust Paper Machine Vent 8

#### **EMISSION CALCULATIONS**

Date Time Began Time Ended		Run 1 6/26/21 1315 1415	Run 2 6/26/21 - 1420 1520	Run 3 6/26/21 /525 1625	Mean 
Volumetric Flow Rate, (Qs), D BWS % Oxygen Recovery, %	SCFM	6.31E+04 0.238 20.2 91.1	6.57E+04 0.230 20.2 91.1	6.27E+04 0.230 20.2 91.1	6.38E+04 0.233 20.2 91.1
Total Reduced Sulfur  Concentration, pp Emission Rate, lb		0.66 0.22	0.58 0.20	0.61 0.20	0.62 0.21
H2S  Concentration, pp Concentration, pp Emission Rate, lb	om (Corrected for Recovery)	0.12 0.13 0.04	0.09 0.10 0.03	0.12 0.13 0.04	0.11 0.12 0.04



New Indy Catawba, SC

15730.001.008 No. 8 Hood Exhaust

	ISOKINETIC CALC	ULATIONS			
Run Number		1	2	3	Mean
Date		6/26/21	6/26/21	6/26/21_	
Time Began		1315	1420	1525	
Time Ended		1405	1510	1615	
	INPUT DAT			_	
Sampling Time, min	(Theta)	48.0	48	48	48
Stack Diameter, in.	(Dia.)	66 -	66	66	66
Barometric Pressure, in. Hg	(Pb)	29.68	29.68	29.68	29.68
Static Pressure, in. H2O	(Pg)	-0.71	0.71	-0.71	-0.71
Pitot Tube Coefficient	(Cp)	0.84	0.84	0.84	0.84
Meter Correction Factor	(Y)	1.0030	1.0030	1.0030	1.0030
Orifice Calibration Value	(Delta H@)	1.8000	1.8000	1.8000	1.8000
Nozzle Diameter, in.	(Dn)	0.250	0.250	0.250	0.250
Meter Volume, ft <sup>3</sup>	(Vm)	30.745	30.782	30.346	30.624
Meter Temperature, °F	(Tm)	94.9	96.0	92.1	94.3
Meter Temperature, °R	(Tm-R)	554.9	556.0	552.1	554.3
Meter Orifice Pressure, in. H2O	(Delta H)	1.300	1.300		1.300
Ave Sq Rt Orifice Press, (in. H2O) <sup>1</sup> / <sub>2</sub>	((Delta H)½)avg)	1.140	1.140	1.140	1.140
Volume H2O Collected, mL	(Vlc)	194.0 -	184.6		187.6
CO2 Concentration, %	(CO2)	0.1	0.1	0.1	0.1
O2 Concentration, %	(O2)	20.2	20.2	20.2	20.2
Ave Sq Rt Velo Head, (in. H2O) <sup>1</sup> / <sub>2</sub>	((Delta P)½)avg)	1.096	1.130	1.079	1.102
Stack Temperature, °F	(Ts)	183.6	184.2	184.0	183.9
Stack Temperature, °R	(Ts-R)	643.6	644.2	644.0	643.9
Moisture Fraction (at Saturation)	(BWS)	0.559	0.566	0.564	0.563
	CALCULATED	DATA			
Nozzle Area, ft <sup>2</sup>	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft <sup>2</sup>	(As)	23.76	23.76	23.76	23.76
Stack Pressure, in. Hg	(Ps)	29.63	29.63	29.63	29.63
Meter Pressure, in. Hg	(Pm)	29.78	29.78	29.78	29.78
Standard Meter Volume, ft <sup>3</sup>	(Vmstd)	29.189	29.166	28.958	29.105
Standard Water Volume, ft <sup>3</sup>	(Vwstd)	9.132	8.689	8.666	8.829
Moisture Fraction (Measured)	(BWS)	0.238	0.230	0.230	0.233
Moisture Fraction (lower sat/meas)	(BWS)	0.238	0.230	0.230	0.233
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	28.82	28.82	28.82	28.82
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	26.24	26.34	26.33	26.31
Average Stack Gas Velocity, ft/sec	(Vs)	71.60	73.73	70.40	71.91
Stack Gas Flow, actual, ft <sup>3</sup> /min	(Qa)	102063	105108	100356	102509
Stack Gas Flow, actual, it //iiiii Stack Gas Flow, Std , ft <sup>3</sup> /min			65700	62685	63838
Stack Gas Flow, Stu , It /IIIII	(Qs)	63130	03/00	02003	03030
Calibration check	(Yqa)	1.0261	1.0259	1.0370	1.030
Cantration check	( 1 qu)	1.0201	1.0237	1,0070	2 660/

ABJER SHI

2.66%

Percent difference from Y

static. -. 71

		4	ks	al Final	30 0,000	۶٬۰۶	x load			COMMENTS																		V <sub>m-std</sub> ,		% Isokinetic	15730.0 , #B Paper M SDTVs & #1 Emission
	Page 1 of 1	Factor N/	Leak Checks	Initial	0.000	ani uni	Cede	W/4	CONT		(in Hg)	8	7	76	7	Q	7	8	4	2	78	7	4	7	76	7	8	Max Vac	Check		
		×			Volume, ft <sup>3</sup>	@ Vac., in. Hg	Pitot	Sample ID			F) TEMP (°F)	107	59	56	55	56	26	28	28	17	57	56	25	36	200	59	09	Max Temp	Thermocouple Check	Meter Temp., °F Ref. Temp. °F	Result
		P	in. H <sub>2</sub> O				Ë	Sar	30	FILTER	TEMP (°F)	A/N															T	Min/Max		≥	
pressure	-	9- % / V	5 6	78.7 mL	5.8 9		Stack Area 23.76 ft <sup>2</sup>	91			TEMP (°F)	253	652	282	257	253	246	253	25/	1251	283	252	1254	252	652	182	784	Min/Max 251/266			
		emp. 2	ר, ונ	Gain /	Gain		Area 23	J rse Point		PROBE TEMB (Pr)		245	244	294	544	245	244	241	240	145	244	242	245	245	241	243	247	24s/247	by Orsat Fyrite	Leak Check, Pre-run Post-run	
Method: FPA 4 Moisture	סופומוס	Ambient Temp. Saro, Pressure*	Static Pressufe	Impinger Gain	Silica Gel Gain		Stack	Total Traverse Points			TEMP (°F)	92	92	93	42	46	46	46	35	36	96	36	47	47	63	97	96	$\vdash$	d2/CO2	Leak Cirk	
A 4 M	1, 1					4		in.		DGM	TEMP (°F)	WIA													_		>	Av	0	0.10	23.9
od. FD		M A025	0	, ,		0.84	2	0		STACK	(,E)	183	183	18	184	184	185	183	187	182	183	184	185	184	183	188	185	183.6 183.6	ompositio	•	%
Meth		-	-	R(		-	no ID Acl3	Jiam 2 C		DRY GAS METER READING (ft³)	100.831	102.7	104.6	13 ms 106 S	108.4	110.3	112,2	119.1	116.0	117.9	119.8	111.8	123.7	125.6	127.5	12.5	131.576	30,745	Flue Gas Composition	Oxygen, % Carbon Dioxide, %	Moisture, %
		Console ID  Meter Corr., Y	Console ∆H@	Probe ID/Length	Liner Material	Pitot ID/Coeff.	Thermo ID Nozzle ID/Diams	Avg. Nozzle Diam.		ORIFICE PRESSURE AH	(in. H <sub>2</sub> O)	1.3	5.7	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	3	1.3	1.3	1.3		>	Avg VAH /	3	
e		New Indy atawba, SC	No. 8 Hood Exhaust	000 700	15/30.001.008		121	min.			(in. H <sub>2</sub> O)	1.2	1:1	1.2	.97	.48	. 36	1.1	1.0	1.3	1.4	1.3	1.4	5:	1.3	3	_	21.8976	138t	Commensos 6	1.2068
Id Data		New Inc Catawba,	No. 8 Ho	Real	15/30		014/20	48		CLOCK TIME (plant time)	13:15																14:05	Barometric Pressure is at port elevation	THE PARTY OF THE P	(e	1
tic Fie		Client Location/Plant	Source	ocation	W. O. Number	Kun Number	Date Dersonnel	Sample Time		SAMPLE TIME (min)	0	ю	9	6	12	15	18	21	24	27	30	33	36	39	42	45	48	tric Pressure is			Integrated Air Service
<b>Isokinetic Field Data</b>		Locatic		Sample Location	, s	Kun	Test Pe	Samp	The second second	RSE T	NO.	A-1	2	е	4	22	9	7	00	B-1	2	ო	4	2	9	7	∞ !	Baronie	FIM	3	Integrate

			S	Il Final	- Co.	101				OF IN THE WAY									
Page 1 of 1		K Factor ///	Leak Checks	Initial	77			NA	Run 2	SAMPLE	VACUUM (in Hg)	3	3	3	2	m	2	a	1
	Ŀ				Volume ft3	@ Vac in Ho	Pitot	Filter ID		IMPINGER	T	59	09	28	56	55	26	24	
		D	o O					Filte	San	FILTER	TEMP (°F)	A/W	_						+
	4 °F	1.00 in. H	Static Pressure -, 7/ in. H <sub>2</sub> O	79.5 mL	0	,	26 H2		16	FILTER	TEMP (°F)	25.3	757	883	284	255	254	255	
	Ambient Temp. 84	sure* 24.	ssure 7	Gain /7	Gain 5		Stack Area 73,76 ft <sup>2</sup>		Total Traverse Points	PROBE	TEMP ('F)	293	243	241	245	448	1/2	242	
Method: EPA 4, Moisture	Ambient T	Baro. Pres	Static Pre	Impinger Gain	Silica Gel Gain		Stack		otal Trave	DGM	TEMP (°F)	16	47	36	26	16	38	96	1
A 4, N							8		in.	DGM	TEMP (°F)	N/A	_						
od: EP				17		0.84			0	STACK TEMP	( <sub>9</sub> E)	183	181	183	183	186	185	185	1
Metho	4023	(1.003		PRGC-L	88	. p77	A023		.250	DRY GAS METER READING (ft³)	1.774	33.7	35.6	7.5	1,4	.3	3.2	5.1	
	Console ID	Meter Corr., \	Console ∆H@	)/Length	Liner Materia	Pitot ID/Coeff	Thermo ID	//Diams	le Diam		5	/	13	13	(39	141	143	195	
	ပိ	Meter	Cons	Probe ID/Length	Liner	Pitot	F	Nozzle ID/Diams	Avg. Nozzle Diam	ORIFICE PRESSURE	(in. H <sub>2</sub> O)	1.3	1.3	1.3	1,3	L.3	1.3	1.3	-
	ndy	a, SC	Exhaust		01.008		(2)	3	min.	VELOCITY PRESSURE	op (in. H <sub>2</sub> O)	1.1	1.2	1.2	1.1	(.2	1.3		
d Data	New Indy	Catawba, SC	No. 8 Hood Exhaust	Real	15730.001.008	2	6/26	BCA / BE	34	CLOCK TIME (plant time)	14:20								
tic Fiel	Client	Location/Plant		ocation	W. O. Number	Run Number	Date	rsonnel	Sample Time	SAMPLE TIME (min)	0	es	9	0	12	15	18	21	3
<b>Isokinetic Field Data</b>		Locatic		Sample Location	W. O. I	Run		Test Personnel	Samp	SSE T	ON	A-1	2	8	4	2	9	7	•
									1	Na American Marie Company					_1				-

				4		11111		,						H H							1573	0.001.008
COMMENTS					100													. 4		We.	3 Paper DTVs. & Emission	Machine, #1-2 CBs on Report
																	/	V <sub>m-std</sub> ,	Qs, dscfm	Calculated by	QC by	
TRAIN	(in Hg)	3	n	3	2	m	2	2	3	3	07	N	M	3	a	3	8	Max Vac		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		
IMPINGER	TEMP (°F)	59	9	28	56	57	56	54	53	52	52	25	53	54	52	1600	35510	Max Temp	Thermocouple Check	Ref. Temp, °F	Result	
FILTER EXIT	TEMP ('F)	//A	_			-				7	7				5	47	7	Min/Max	Ther	Ref		
	IEMP (%F)	253 N	757	253	254	255	254	255	122	253	253	752	282	252	254	SA	53/	Min/Max 51/255	e M3A		II	
PROBE TEMP (°F)		243 2	243	241 2	245 2		241 2			2 442	243 2	245 2	346	243 2	244 2	200	244 M	Min/Max Min/Max	by Orsat Fyrite M3A	Post-run		
	IEMP (TF)	2 %	97 2	9	6 2	36 8		96 2		95 2	1	7	2 26	5	0		35 12	N 2.95	ا م ق			
	1 (L)	1/4 9	,	190	9	9	9	6	2	6	16	6	6	6	16	6	4	Avg T <sub>m</sub>	0 =			
< n	î.	183 A	181	183	83	186	185	185	85	83	84	18	400	185	185	184	184	Avg T <sub>s</sub> / <b>/8/</b>	nposition	de, %		
(#)	74	7	9		(		18			1		1 6		7 18	18	8/		- 2	Flue Gas Composition	Carbon Dioxide, %	Moisture, %	
READING	131.7	/33.	135.6	137,5	139.4	141.3	143.2	195.1	147.0	141.C	150.9	152.	154.8	156.	158,	16.6	162.556	Zo. 78	FIG	i ö	M	
PRESSURE AH	(in. H <sub>2</sub> O)	1.3	.3	1.3	i	8.	5.	.3	3	2.	v.	i	.3	3	3	1.3	1.3	Avg ∆H√ 3CC	AVB JAH			
	4 <sup>2</sup> O)		7	2 1			7						~				1	1				
PRESSURE	(in. †		1.2	1	1.1	(, 2	1.3	1.1	1.1	1.5	1.9	1.4	1,3	1.5	1,4	1:05	6.1	1, Bol	1.2812	Comments		
(plant time)	14:20																12:10	at port elevati	7		rices	
(min)	0	es	9	6	12	15	18	21	24	27	30	33	36	39	42	45	48	*Barometric Pressure is at port elevation		SOUTHIONS	Integrated Air Services	
POINT		A-1	2	က	4	5	9	7	ω	B-1	2	က	4	2	9	7	80	*Barometi	ME	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Integrated	
																					MII	277

	T Sys	Initial &Final	100 00000000000000000000000000000000000	of boad		WENT WOOD																		Vm-std.		Dryer, #3 P: #2-3 SP En	15730.001.008 aper Machine, (s. & #1-2 CBs action Report	
Page 1 of 1	K Factor N/4		in Ha 19%		Run 3	SAMPLE	VACUUM (in Hg)	४	8	7	8	4	7	8	8	78	7	7	4	8	9	76	7	Max Vaug	Check			
	X		Wolume, ff	Pitot	Filter ID Sample ID	IMPINGER	TEMP (°F)	67	28	55	22	5/	18	52	53	28	53	22		53	513	54	54	Max Temp	Thermocouple Check	Ref. Temp, °F Result		
	in. Hg in. Hg				Filter	FILTER	TEMP (°F)	MA															7	Min/Max		œ		
	36 °F	78 mL	6	.76 ft <sup>2</sup>	s 16	FILTER	TEMP (°F)	253	252	253	25/	255	252	753	262	1254	252	251	1251	254	253	253	251	251/9%				
	1001	r Gain	Call	Stack Area 73.76	J erse Point	PROBE	) )	242	242	244	245	248	243	244	245	243	246	246	245	246	545	244	292	2)2/2/3	by Or	Post-run		
Moisture	Ambient Temp. Baro. Pressure* Static Pressure	Impinger Gain	Silica Gel Galli	Stack	Total Traverse Points	DGM	F) TEMP (°F)	16	90	90	89	00/0	20	90	92	93	44	66	93	56	36	44	16	92.06	O <sub>2</sub> /CO <sub>2</sub>			
4			84		ï.		TEMP (°F)	MA			~								1 7			)   0	<b>\</b>	6	2	1 1		
ethod: EPA	1,003	17-77	77 0.	520	150	IETER STACK (ft³) TEMP	<b>∞</b>	184	184	183	183	181	185	185	185	184	184	184	184	184	184	183		1849 T	Flue Gas Composition Oxvgen. %	Carbon Dioxide, % Moisture, %		
Me	8-1-	PA	Soeff.	7	-	DRY GAS ME	162.998	14.9	16.7	118.6	12.5	122.4	179.3	179.1	178.0	17,8	181.8	183.7	185.6	187.5	189.5	191.4	193.344	Total Volume	Flue Gas Co	Carbo		
	Console ID  Meter Corr., Y  Console △H@	Probe ID/Length	Pitot ID/Coeff	Thermo ID	Avg. Nozzle Diam.	ORIFICE PRESSURE	(in. H <sub>2</sub> O)	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3		1. 1402 1. 1402			
	No. 8 Hood Exhaust	15730 001 008	3	17/	min.	VELOCITY PRESSURE	(in. H <sub>2</sub> O)	1.0	1.7	0.	1	رة. ا		1.1		٦.	1.4	1.3	1.4	1.2	1.2	1.7		1.679 PC0.1	1.168	Comments		
Id Data	Catawba, No. 8 Hood E	15730 I		1/26	1841	CLOCK TIME (plant time)	15:25																16:15	*Barometric Pressure is at port elevation	72	6		
tic Fie	Client Location/Plant Source	ample Location W. O. Number	Run Number	Date Derconnel	Sample Time	SAMPLE TIME (min)	0	8	9	o	12	15	18	21	24	27	30	33	36	39	42	45	48	etric Pressure is		Integrated Air Services		
<b>Isokinetic Field</b>	Locati	Sample Location W O Number	Run	Toet D	Samp	TRAVERSE	NO.	A-1	2	က	4	ιΩ	ဖ	7	∞	B-1	2	ო	4	2	9	7	œ	*Barom	W.E	Integrate	278	3

# Sample Recovery Field Data

Method: EPA 4, Moisture

Location	Client n/Plant	New Indy Catawba, SC		<b>V</b>	Source V.O. Number	No. 8 H		
			ingers 1 - 3 measu					
Run No.	TO THE REPORT OF THE PARTY OF T			6/26/21	Reco	overy Date		
- Campio IE				M/A mpingers		Analyst	BEA/C	)
	11	2	3			Imp.Total	Silica Gel	Total
Contents							grams	
Final	915.9	833.3	643.6				844.7	
Initial	764.9	808.4	640.8				829.4	
Gain	151	24.91	2.8 /				15.3	194
Im	pinger Color 4	lear			Labled?	V		
Silica G	Sel Condition 6	rest			Seale J?			
		America Constitution						
Run No.	2		Sample Date	6/26/21	Reco	overy Date	6/26/2	21
Sample ID			Filter ID	N/A		Analyst	BEA/B	3.5
				npingers				
Contents	276	2	3		1	Imp.Total	Silica Gel	Total
Final	936.5	704.6	554.8				grams 929,9	
Initial		682.5	553.6				924.8	
Gain	154.2	22.1	1.2/			179.5		184.6
lm	pinger Color CI	lear			Labled?	~		
Silica G	Gel Condition Le	od			Sealed?	~		
				. / /			0.4	
Run No.	3		Sample Date	6/24/21	Reco	very Date	4/26/2	1
Sample ID			Filter ID	NA		Analyst	BEA/13	38
				npingers	40.00		Anjana -	
Contents	11	2	3			Imp.Total	Silica Gel	Total
Final	907.5	830.8	L33.4				grams 890.8	
Initial	773.4	789.5	636.8				884.7	
Gain	134.1	41.3 /	2.6			178	6.1	184.19
Im	pinger Color Cle	ar			Lable 1?	V		.01.01
	el Condition Co				Sealed?	V		
			eck COC for Sample ID	Os of Media Blanks				





# Sample and Velocity Traverse Point Data Sheet - Methodulp Tryer, #3 Paper Machine, #1:23 SDTVs, & #1-2 CBs Emission Report

Client		New Indy	_		Operator	VD / LF
Loaction/Plant	i	Catawba, SC			Date	15-Jun-21
Source		No. 8 Hood Exhaust	_	\	N.0. Number	15730.001.008
Duct Type	7	Circular		Rectangular Duct		Indicate appropriate type
Traverse Type		Particulate Traverse	<b>V</b>	Velocity Traverse		

Distance from far wall to outside of port (in.) = C	66.125
Port Depth (in.) = D	0.125
Depth of Duct, diameter (in.) = C-D	66
Area of Duct (ft <sup>2</sup> )	23.76
Total Traverse Points	16
Total Traverse Points per Port	8

Rectangular Ducts Only	
Width of Duct, rectangular duct only (in.)	
Total Ports (rectangular duct only)	

Traverse Point Locations											
Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)								
1	3.2	2	2								
2	10.5	7	7								
3	19.4	13	13								
4	32.3	21 1/2	21 1/2								
5	67.7	44 1/2	45								
6	80.6	53	53 1/2								
7	89.5	59	59								
8	96.8	64	64								
9											
10											
11											
12											

Equivalent Diameter = (2\*L\*W)/(L+W)

				Trave	rse Poi	nt Loc	ation P	ercer	nt of Sta	ck -C	ircular				
		Number of Traverse Points													
		1	2	3	4	5	6	7	8	9	10	11	12		
T	1		14.6		6.7		4.4		3.2		2.6		2.1		
ľ	2	62.5	85.4		25		14.6		10.5		8.2		6.7		
Ì	3				75		29.6		19.4		14.6		11.8		
	4	1221		190	93.3	/Rex	70.4	Senal I	32.3	Me	22.6	11.5	17.7		
Ì	5						85.4		67.7		34.2		25		
Ì	6	10.182	114 514	ANN	370		95.6		80.6	andle	65.8	1913	35.6		
Ì	7								89.5		77.4		64.4		
ľ	8			Rel	2:3	3			96.8		85.4		75		
	9										91.8		82.3		
١	10	1 910	Ray.	100	o hal			100	100		97.4		88.2		
i	11												93.3		
ı	12	1000	5			187	N. EL	1		No.ES		-	97.9		

Port Diam. (in) =	4
Number of Ports =	2

Flow Disturbances	
Upstream - A (ft)	5.5
Downstream - B (ft)	25.0
Upstream - A (duct diameters)	1.00
Downstream - B (duct diameters)	4.55

Diagram of Stack

Duct Diameters Upstream from Flow Disturbance\* (Distance A)

0.5

1.0

1.5

2.0

2.5

40

A Higher Number is for Rectangular Stacks or Ducts

Particulate Traverse Points

24 or 25a

20

Velocity Traverse Points

16

Stack Diameter > 24 inches

Duct Diameters Downstream from Flow Disturbance\* (Distance B)

\* From Point of Any Type of

etc.)

0

Disturbance (Bend, Expansion, Contraction,

			Tra	averse	Point	Locati	on Pe	cent o	f Stac	k -Reci	tangula	ar .			
	-	Number of Traverse Points													
		1	2	3	4	5	6	7	8	9	10	11	12		
Ţ	1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2		
ı	2	(C)(2)	75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5		
	3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8		
֡֜֝֡֓֞֩֩֩֓֜֩֜֜֜֜֡֜֜֜֜֜֡֜֜֜֡֡֡֡֡	4			1453.6	87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2		
0	5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5		
ā	6		1834	Title !	15325		91.7	78.6	68.8	61.1	55.0	50.0	45.8		
t	7							92.9	81.3	72.2	65.0	59.1	54.2		
1	8			100	3760	200	THE P		93.8	83.3	75.0	68.2	62.5		
٥ ا	9									94.4	85.0	77.3	70.8		
"	10	Link.	4 3 3					157	180	0.74	95.0	86.4	79.2		
	11											95.5	87.5		
	12	PIERE!	146	3683	250	380		70.72		Single.	-10:30		95.8		

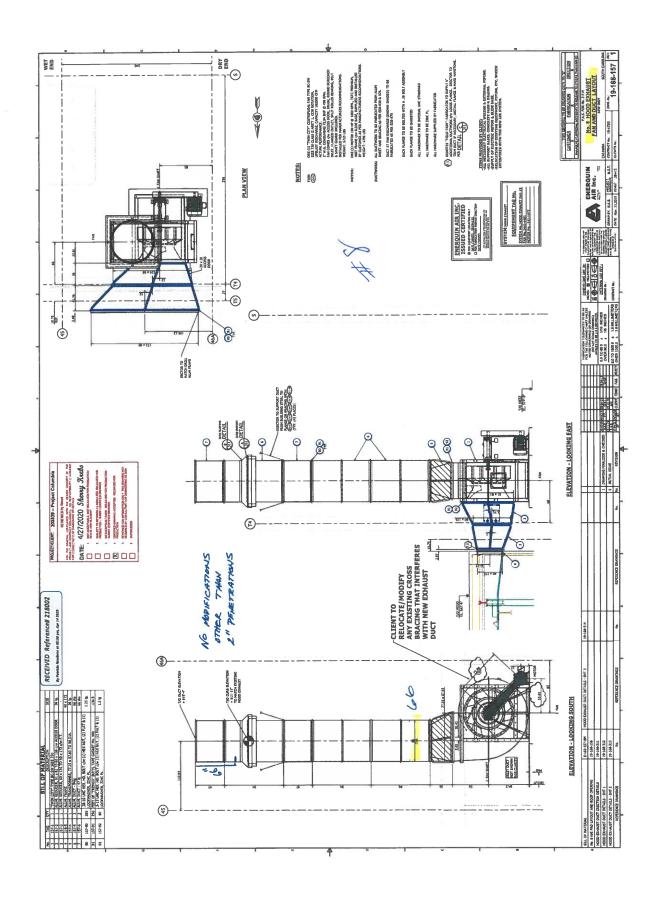
Tape Measure I.D. #	
	280

8 or 9ª

Rectangular Stack Points & Matrix 9 - 3 x 3 12 - 4 x 3 16 - 4 x 4 20 - 5 x 4 25 - 5 x 5 30 - 6 x 5 36 - 6 x 6 42 - 7 x 6 49 - 7 x 7

Stack Diameter = 12 - 24





#### **RUN SUMMARY**

Number 4

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 26 Jun 2021

Start Time 13:15 End Time 14:15

**Average Measured TRS Conc.** 

Recovery No. 3

**TRS Corrected for Recovery** 

0.54 ppm

91.1 % 0.59 ppm

63 0.66



#### **RUN SUMMARY**

Number 5

Client: New Indy

Location: Catawba, SC
Source: Paper Machine Vent 7

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

Date: 26 Jun 2021

**End Time 15:20** Start Time 14:20

**Average Measured TRS Conc.** Recovery No. 3

**TRS Corrected for Recovery** 

0.46 ppm 91.1 %

0.51 ppm



#### **RUN SUMMARY**

Number 6

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 7

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

Date: 26 Jun 2021

Start Time 15:25

**End Time** 16:25

**Average Measured TRS Conc.** 

Recovery No. 3

**TRS Corrected for Recovery** 

053 0.56 051 ppm 91.1 % 0.56 ppm 059 0.61



			TRS	ppm	0	0.77	0.88	0.25	0.50	0.64	0.74	0.46	0.30	99.0	0.30	0.33	0.92	0.44	0.43	0.67	0.82	0.23	0.63	0.75	1.36	09.0
1.008		121		v			0.017					0.017	0.017	0.017	0.017	0.017				0.017			0.017			
15730.001.008	ΛD	26 Jun 2021	DMDS	bpm		0.07		0.05	0.08	0.08	0.07						0.13	0.04	0.08		0.07	0.04		0.05	0.05	
Project Number:	Operator:	Date:		area		38	<b>~</b>	22	43	48	32	<b>~</b>	<2	<2	<b>~</b>	<2	86	14	47	<b>~</b>	35	16	<b>~</b>	19	19	
Project N	0			v				0.054														0.054				
			DMS	mdd		0.21	0.30		0.11	0.10	0.16	0.33	0.18	0.26	0.17	0.18	0.29	0.27	0.14	0.12	0.18		0.47	0.51	0.84	
	Method: 16	1		area	0	31	22	<b>~</b>	10	∞	4	29	23	44	22	23	54	46	14	12	24	<b>~</b>	123	142	334	
		Calibration:		V			0.054	0.054		0.054		0.054	0.054		0.054	0.054		0.054	0.054			0.054	0.054	0.054		
	2	Ö	MeSH	ppm		0.20			0.19		0.22			0.23			0.33			0.44	0.27				0.20	:
				area		28	<b>~</b>	7	27	7	32	<b>%</b>	7	36	<b>~</b>	<b>~</b>	69	<b>~</b>	<2	113	49	7	<b>~</b>	7	29	
	10,					0.21	0.49	0.04	0.04	0.31	0.23	0.04	0.04	0.14	0.04	90.0	0.04	0.04	0.07	0.07	0.22	0.04	0.07	0.08	0.22	0.12
	FIS C	ent X	တ္	٧				0.037	0.037			0.037	0.037		0.037		0.037	0.037				0.037				
χ	a, SC	Paper Machine Vent X	H <sub>2</sub> S	mdd	3 Run 1	0.21	0.49			0.31	0.23			0.14		90.0			0.07	0.07	0.22		0.07	0.08	0.22	
New Indy	Catawb	Paper M		area	PM vent 8	49	202	<2	<b>~</b>	96	22	<2	<b>%</b>	25	<b>%</b>	7	<b>~</b>	<b>%</b>	တ	တ	54	7	7	10	52	
Client:	Location:	Source:		Time		13:15	13:18	13:21	13:24	13:27	13:30	13:33	13:36	13:39	13:42	13:45	13:48	13:51	13:54	13:57	14:00	14:03	14:06	14:09	14:12	Averages

			TRS	mdd	0.38	0.68	0.36	0.54	0.40	0.31	0.47	0.63	0.48	0.78	0.60	69.0	0.67	0.68	0.37	0.54	0.33	0.73	0.52	0.41	0.53
800.1		121		V	0.017		0.017		0.017	0.017	0.017					0.017			0.017			0.017			
15730.001.008			DMDS	mdd		0.05		0.09				0.08	0.09	0.10	0.07		0.07	0.13		0.05	90.0		90.0	0.03	
Jumper:	Operator:	Date:		area	<2	20	<b>~</b>	53	<2	<2	<2	47	26	28	30	<2	34	106	<2	23	59	<b>~</b>	25	10	
Project Number:	Project N			V			0.054			0.054			0.054						0.054		0.054				
	Method: 16		DMS	ppm	0.19	0.21		0.22	0.21		0.34	0.37		0.41	0.08	0.23	0.15	0.16		0.30		0.40	0.31	0.11	
				area	24	31	<b>~</b>	31	30	<2	71	81	<2	94	9	34	17	19	<2	26	<2	91	29	6	
		Calibration: 1		v	0.054			0.054	0.054		0.054	0.054								0.054	0.054	0.054	0.054		
	2	Ö	MeSH	mdd		0.14	0.11			0.11			0.15	0.15	0.28	0.39	0.30	0.21	0.24					0.13	
				area	<2 <	15	7	<b>%</b>	<b>%</b>	7	<b>%</b>	<b>%</b>	17	16	53	91	29	31	40	<2	<2	<b>~</b>	<b>~</b>	14	
-	رر ن	101			0.10	0.23	0.16	0.09	0.10	0.10	0.04	0.04	0.09	0.04	0.10	0.04	0.08	0.04	0.04	0.07	0.10	0.24	0.04	0.10	0.09
		ent 7-7	H <sub>2</sub> S	v							0.037	0.037		0.037		0.037		0.037	0.037				0.037		
λķ	Catawba, SC	¶achine ∨	I	mdd	0.10	0.23	0.16	0.09	0.10	0.10			0.09		0.10		0.08			0.07	0.10	0.24		0.10	
New Indy	Catawba, SC	Paper N		area	15	28	31	13	15	16	<b>%</b>	<b>%</b>	13	<2	14	<2	တ	<b>~</b>	<b>~</b>	တ	15	64	<b>~</b>	15	
Client:	Location:	Source:		Time	14:20	14:23	14:26	14:29	14:32	14:35	14:38	14:41	14:44	14:47	14:50	14:53	14:56	14:59	15:02	15:05	15:08	15:11	15:14	15:17	Averages

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		TRS	ppm	0.30	49	48	0.34	29	22	40	20	40	54	57	41	53	43	33	94	49	23	75	28	26
		Ĕ	d	O	ò	ò	Ö	Ö	Ö	ò	O	ò	Ö	Ö	ò	0	ò	0	Ö	ò	<del>-</del>	0	0.	ö
1.008	121		V		0.017	0.017				0.017							0.017	0.017			0.017	0.017	0.017	
15730.001.008	VD 26 Jun 2021	DMDS	mdd	0.05			90.0	0.11	0.05		0.13	0.07	0.05	0.10	0.04	0.03			0.12	90.0				
umber:	Operator: Date:		area	18	<b>~</b>	<b>~</b>	27	78	17	<b>~</b>	94	37	22	29	12	တ	<2	<2	81	59	7	<2	<2	
Project Number:	ō		v	0.054									0.054		0.054					0.054			0.054	
		DMS	mdd		0.12	0.13	0.13	0.18	0.18	0.11	0.11	0.07		0.18		0.20	0.14	0.17	0.50		0.71	0.38		
	Method: 16 Calibration: 1		area	\$ \$	7	13	13	23	22	10	တ	4	<b>~</b>	24	<b>~</b>	28	14	21	135	<b>~</b>	249	84	<b>%</b>	
			v				0.054				0.054							0.054		0.054				
	≥ (ÿ	MeSH	mdd	0.12	0.09	0.12		0.07	0.35	0.10		0.12	0.34	0.20	0.18	0.14	0.23		0.12		0.18	0.24	0.46	
			area	11	7	7	<b>~</b>	2	74	တ	7	12	71	29	25	15	32	<b>~</b>	7	<b>~</b>	25	38	121	
S	101			0.04	0.25	0.20	0.04	0.11	0.14	0.15	0.29	0.07	0.04	0.08	0.10	0.13	0.04	0.07	0.10	0.25	0.10	0.10	0.04	0.12
>	Catawba, SC Paper Machine Vent 74	H <sub>2</sub> S	v	0.037			0.037						0.037				0.037						0.037	
		エ	mdd		0.25	0.20		0.11	0.14	0.15	0.29	0.07		0.08	0.10	0.13		0.07	0.10	0.25	0.10	0.10		
New Indy	Catawba, SC Paper Machin		area	<2 2	29	4	<b>%</b>	17	25	29	83	7	<b>~</b>	10	4	21	<b>~</b>	∞	4	29	4	16	<b>~</b>	
Client:	Location: Source:		Time	15:25	15:28	15:31	15:34	15:37	15:40	15:43	15:46	15:49	15:52	15:55	15:58	16:01	16:04	16:07	16:10	16:13	16:16	16:19	16:22	Averages

Number 4

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

Time	H₂S		M	eSH	DI	MS	DN	IDS	TRS	
rime	area	ppm	area	ppm	area	ppm	area	ppm	ppm	
•				PM vent 8	Run 1					
13:15	49	0.21	28	0.20	31	0.21	38	0.07	0.77	
13:18	202	0.49	<2	< 0.05	55	0.30	<2	< 0.02	0.79	
13:21	<2	<0.04	<2	< 0.05	<2	< 0.05	22	0.05	0.11	
13:24	<2	< 0.04	27	0.19	10	0.11	43	0.08	0.47	
13:27	96	0.31	<2	< 0.05	8	0.10	48	0.08	0.58	
13:30	57	0.23	32	0.22	18	0.16	35	0.07	0.74	
13:33	<2	< 0.04	<2	< 0.05	67	0.33	<2	< 0.02	0.33	
13:36	<2	< 0.04	<2	< 0.05	23	0.18	<2	< 0.02	0.18	
13:39	25	0.14	36	0.23	44	0.26	<2	< 0.02	0.63	
13:42	<2	< 0.04	<2	< 0.05	22	0.17	<2	< 0.02	0.17	
13:45	7	0.06	<2	< 0.05	23	0.18	<2	< 0.02	0.24	
13:48	<2	< 0.04	69	0.33	54	0.29	98	0.13	0.88	
13:51	<2	< 0.04	<2	< 0.05	46	0.27	14	0.04	0.35	
13:54	9	0.07	<2	< 0.05	14	0.14	47	0.08	0.38	
13:57	9	0.07	113	0.44	12	0.12	<2	< 0.02	0.64	
14:00	54	0.22	49	0.27	24	0.18	35	0.07	0.82	
14:03	<2	< 0.04	<2	< 0.05	<2	< 0.05	16	0.04	0.09	
14:06	7	0.07	<2	< 0.05	123	0.47	<2	< 0.02	0.54	
14:09	10	0.08	<2	< 0.05	142	0.51	19	0.05	0.69	
14:12	52	0.22	29	0.20	334	0.84	19	0.05	1.36	
Average		0.11		0.10		0.24		0.04	0.54	





## **RUN DATA** Number 82

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

	Time	Н	<sub>2</sub> S	Me	SH	DI	MS	DN	IDS	TRS
	Time <sup>,</sup>	area	ppm	area	ppm	area	ppm	area	ppm	ppm
	14:20	15	0.10	<2	<0.05	24	0.19	<2	<0.02	0.29
	14:23	58	0.23	15	0.14	31	0.21	20	0.05	0.68
	14:26	31	0.16	11	0.11	<2	< 0.05	<2	< 0.02	0.27
	14:29	13	0.09	<2	< 0.05	31	0.22	53	0.09	0.49
	14:32	15	0.10	<2	< 0.05	30	0.21	<2	< 0.02	0.31
	14:35	16	0.10	11	0.11	<2	< 0.05	<2	< 0.02	0.22
	14:38	<2	< 0.04	<2	< 0.05	71	0.34	<2	< 0.02	0.34
	14:41	<2	< 0.04	<2	< 0.05	81	0.37	47	0.08	0.54
	14:44	13	0.09	17	0.15	<2	< 0.05	56	0.09	0.42
	14:47	<2	< 0.04	16	0.15	94	0.41	58	0.10	0.74
	14:50	14	0.10	53	0.28	6	0.08	30	0.07	0.60
	14:53	<2	< 0.04	91	0.39	34	0.23	<2	< 0.02	0.62
	14:56	9	0.08	59	0.30	17	0.15	34	0.07	0.67
	14:59	<2	< 0.04	31	0.21	19	0.16	106	0.13	0.64
	15:02	<2	< 0.04	40	0.24	<2	< 0.05	<2	< 0.02	0.24
	15:05	9	0.07	<2	< 0.05	56	0.30	23	0.05	0.48
	15:08	15	0.10	<2	< 0.05	<2	< 0.05	29	0.06	0.23
	15:11	64	0.24	<2	< 0.05	91	0.40	<2	< 0.02	0.64
	15:14	<2	< 0.04	<2	< 0.05	59	0.31	25	0.06	0.43
	15:17	15	0.10	14	0.13	9	0.11	10	0.03	0.41
A	verage		0.08		0.11		0.18		0.04	0.46





# **RUN DATA** Number 83

Client: New Indy

Location: Catawba, SC
Source: Paper Machine Vent 78

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

Time	H area	₂S ppm	Me area	SH ppm	DI area	MS ppm	DN area	IDS ppm	TRS ppm
15:25	<2	<0.04	11	0.12	<2	<0.05	18	0.05	0.21
15:28	67	0.25	7	0.09	11	0.12	<2	< 0.02	0.46
15:31	44	0.20	11	0.12	13	0.13	<2	< 0.02	0.44
15:34	<2	< 0.04	<2	< 0.05	13	0.13	27	0.06	0.25
15:37	17	0.11	5	0.07	23	0.18	78	0.11	0.59
15:40	25	0.14	74	0.35	22	0.18	17	0.05	0.75
15:43	29	0.15	9	0.10	10	0.11	<2	< 0.02	0.36
15:46	83	0.29	<2	< 0.05	9	0.11	94	0.13	0.65
15:49	7	0.07	12	0.12	4	0.07	37	0.07	0.40
15:52	<2	<0.04	71	0.34	<2	< 0.05	22	0.05	0.45
15:55	10	0.08	29	0.20	24	0.18	67	0.10	0.67
15:58	14	0.10	25	0.18	<2	< 0.05	12	0.04	0.36
16:01	21	0.13	15	0.14	28	0.20	9	0.03	0.53
16:04	<2	< 0.04	35	0.23	14	0.14	<2	< 0.02	0.36
16:07	8	0.07	<2	< 0.05	21	0.17	<2	< 0.02	0.24
16:10	14	0.10	11	0.12	135	0.50	81	0.12	0.94
16:13	67	0.25	<2	< 0.05	<2	< 0.05	29	0.06	0.38
16:16	14	0.10	25	0.18	249	0.71	<2	< 0.02	0.99
16:19	16	0.10	38	0.24	84	0.38	<2	< 0.02	0.72
16:22	<2	<0.04	121	0.46	<2	<0.05	<2	<0.02	0.46
Average		0.11		0.15		0.16		0.04	0.51





### **RECOVERY DATA**

Number 2

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent / 8

Method 16

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 26 Jun 2021

After Run 3 Before Run 4

Start Time 12:55

**End Time** 13:09

X

**Recovery Gas to Probe, Time 12:55** 

Peak Areas, mv-sec

16925 16900

0 17033

Average

ppm

16953

7.34

Recovery Gas to GC, Time 13:06

Peak Areas, mv-sec

18883

18581

18955

Average

ppm

18807 7.82

Recovery 93.9%

## **RECOVERY DATA**

Number 3

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vent 7

Method 16

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 26 Jun 2021

After Run 6 Before Run 7

Start Time 16:25

**End Time** 16:35

Recovery Gas to Probe, Time 16:25

Peak Areas, mv-sec

15588

15927

16534

Average 16016

ppm 7.09

Recovery Gas to GC, Time 16:31

Peak Areas, mv-sec

18437

18819

18738

Average

ppm

18664 7.78

Recovery 91.1%

δX

## **CALIBRATION DATA**

Number 1

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent

Method 16

Project Number: 15730.001.008

Operator: **VD** 

Ambient	Temperature: 72°C		Pressure: 29.70 in. Hg	
Analyte ·	H₂S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	460	457	298	232
Ret. Time, sec	25.0	35.0	63.0	132.0
1 Flow = <b>48.0</b> mL/Min	<b>9.58</b> ppm	<b>9.52</b> ppm	<b>6.20</b> ppm	<b>4.83</b> ppm
Time: 07:01		Peak Area	as, mv-sec	
	25119	23385	10987	48706
	25616	23496	10706	47186
	25021	22672	10690	48066
Average Area	25252	23184	10794	47986
2 Flow = 81.6 mL/Min	<b>5.64</b> ppm	<b>5.60</b> ppm	<b>3.65</b> ppm	<b>2.84</b> ppm
Time: 07:34		Peak Area	as, mv-sec	
	11971	9531	4072	19617
	11666	9535	4189	19344
	11820	9242	4068	20012
Average Area	11819	9436	4110	19658
3 Flow = 151 mL/Min	<b>3.05</b> ppm	<b>3.02</b> ppm	<b>1.97</b> ppm	<b>1.54</b> ppm
Time: 07:49		Peak Area	as, mv-sec	
	3892	3195	1507	6761
	3898	3136	1468	6767
	3818	3182	1462	6752
Average Area	3869	3171	1479	6760





# **CALIBRATION SUMMARY**

Number 1

Method 16

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent

Project Number: 15730.001.008 Operator: VD

H <sub>2</sub> S	1	2	3		
Time	07:01	07:34	07:49		
Concentration, ppm	9.58	5.64	3.05		
Area, mv-sec	25252	11819	3869		
Calc. Conc., ppm	9.36	5.89	2.98		
% Error	-2.4	4.5	-2.0		
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.
	1.6414	2.8084	0.9978	2	0.04
		_			
MeSH	1	2	3		
Time	07:01	07:34	07:49		
Concentration, ppm	9.52	5.60	3.02		
Area, mv-sec	23184	9436	3171		
Calc. Conc., ppm	9.47	5.65	3.01		
% Error	-0.5	0.9	-0.4		
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.
	1.7368	2.6693	0.9999	2	0.05
2110	4		•		
DMS	1 07.04	2	3		1
Time	07:01	07:34	07:49		
Concentration, ppm	6.20	3.65	1.97		
Area, mv-sec	10794	4110	1479		
Calc. Conc., ppm	6.26	3.59	1.99		
% Error	0.9	-1.7	0.8	BAC Any	Dat Lim
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.
	1.7325	2.6531	0.9997	2	0.05
DMDS	1	2	3		
Time	07:01	07:34	07:49		
Concentration, ppm	4.83	2.84	1.54		
Area, mv-sec	47986	19658	6760		
Calc. Conc., ppm	4.82	2.86	1 53		
Calle, Culles, Duni	4.02				
			-0.3		
% Error Calibration Curve	-0.3 <b>Slope</b>	0.6	-0.3 Corr. Coeff.	Min. Area	Det. Lim.

# **CALIBRATION DATA**

Number 2

Method 16

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent

Project Number: 15730.001.008

Operator: VD

Ambient	Temperature: 72°C	Barometric F	Pressure: 29.70 in.	Hg
Analyte	H <sub>2</sub> S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	460	457	298	232
Ret. Time, sec	25.0	35.0	63.0	132.0
1 Flow = 48.0 mL/Min	<b>9.58</b> ppm	<b>9.52</b> ppm	<b>6.20</b> ppm	<b>4.83</b> ppm
Time: 16:36		Peak Area	s, mv-sec	

		2							
1 Flow = 48.0 mL/Min	<b>9.58</b> ppm	<b>9.52</b> ppm	<b>6.20</b> ppm	<b>4.83</b> ppm					
Time: 16:36			ıs, mv-sec						
	26011	25303	11444	51862					
	26531	26149	12036	53970					
	27302	26754	12114	53372					
Average Area	26615	26069	11864	53068					
2 Flow = 88.9 mL/Min	<b>5.17</b> ppm	<b>5.14</b> ppm	<b>3.35</b> ppm	<b>2.61</b> ppm					
Time: 16:50	Peak Areas, mv-sec								
	9447	7596	3066	16100					
	9456	7369	3124	14977					
	9570	7546	3109	14905					
Average Area	9491	7504	3100	15327					
3 Flow = 133 mL/Min	<b>3.45</b> ppm	<b>3.43</b> ppm	<b>2.23</b> ppm	<b>1.74</b> ppm					
Time: 17:14	Peak Areas, mv-sec								
-	4013	3384	1323	6743					
	4015	3427	1344	6741					
	3979	3463	1344	6769					
Average Area	4002	3425	1337	6751					





## **CALIBRATION SUMMARY**

Number 2

Client: New Indy

Location: Catawba, SC
Source: Paper Machine Vent 74

Method 16

Project Number: 15730.001.008

Operator: VD
Date: 26 Jun 2021

H₂S	1	2	3			
Time	16:36	16:50	17:14			
Concentration, ppm	9.58	5.17	3.45			
Area, mv-sec	26615	9491	4002			
Calc. Conc., ppm	9.43	5.38	3.37			
% Error	-1.6	4.1	-2.4			
<b>Calibration Curve</b>	Slope	Intercept		Min. Area	Det. Lim.	
	1.8396	2.6323	0.9977	2	0.05	
MeSH	1	2	3			
Time	16:36	16:50	17:14			
Concentration, ppm	9.52	5.14	3.43			
Area, mv-sec	26069	7504	3425			
Calc. Conc., ppm	9.54	5.10	3.44			
% Error	0.3	-0.7	0.4			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
T/E	1.9895	2.4671	0.9999	2	0.08	
DMS	1	2	3			
Time	16:36	16:50	17:14			
Concentration, ppm	6.20	3.35	2.23			
Area, mv-sec	11864	3100	1337			
Calc. Conc., ppm	6.22	3.32	2.24			
% Error	0.3	-0.8	0.5			,
<b>Calibration Curve</b>	Slope	Intercept		Min. Area	Det. Lim.	
•	2.1400	2.3753	0.9999	2	0.11	
DMDS	1	2	3			
Time	16:36	16:50	17:14			
Concentration, ppm	4.83	2.61	1.74			
Area, mv-sec	53068	15327	6751			
Calc. Conc., ppm	4.83	2.61	1.74			
% Error	-0.0	0.1	-0.0			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	2.0180	3.3447	>0.9999	2	0.03	

#### **ANALYTES AND STANDARDS**

Client: New Indy Project Number: 15730.001.008

Source: Paper Machine Vent (76 of 1) Method 16 Date: 25 Jun 2021

Analyte Molecular Weight	<b>H₂S</b> 34.08	<b>MeSH</b> 48.11	<b>DMS</b> 62.14	<b>DMDS</b> 94.20
Retention Time, sec Peak Detection Window, sec	25.0 10.0	35.0 10.0	63.0 10.0	132.0 10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv Beginning Peak Width, sec	1 1.0	1 1.0	3.0	3.0
Ending Peak Width, sec	2.0	3.0	5.0	5.0
Permeation Device ID Permeation Rate, ng/min	T-51831 642 ✓	33-50536 901	89-50725 758	89-53405 895
Permeation Rate, nL/min*	460	457	298	232

Barometric Pressure: 29.70 in. Hg Ambient Temperature: 72 °F

No Oxygen Correction

 $PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^{\circ} + T_a) / T_s] \times (P_s / P_b)$ 

Where:

PR<sub>nl</sub> = Permeation Rate by volume, nL/min PR<sub>ng</sub> = Permeation Rate by weight, ng/min

V<sub>mol</sub> = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

W<sub>mol</sub> = Molecular Weight of compound

T<sub>a</sub> = Ambient Temperature, °F

T<sub>s</sub> = Standard Temperature = 492°R (32 °F)

Ps = Standard Pressure = 29.92 in Hg

P<sub>b</sub> = Barometric Pressure, in Hg

For example, H<sub>2</sub>S:

PR<sub>nl</sub> = 642 x (22.4 / 34.08) x [(460 + 72) / 492] x (29.92 / 29.70) = 460 nL/min

To calclate concentrations:

 $C = PR_{nl} / F_{d}$ 

Where:

**C** = Concentration, ppmv

**PR**<sub>nl</sub> = Permeation Rate by volume, nL/min

F<sub>d</sub> = Flow rate of diluent, mL/min

<sup>\*</sup>Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min. Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

#### INSTRUMENT INFORMATION

Client: New Indy

Location: Catawba, SC 

Method 16

Project Number: 15730.001.008

Operator: VD

Date: 25 Jun 2021

File: E:\6-26-21.trs

Program Version: 2.0, built 21 Feb 2015 File Version: 2.0

Trailer: 271 Computer: JWS-PROGRAMMING

Analog Input Device: Keithley KUSB-3108

GC Channel: 16

Sampling Rate: 0.050 sec.

Data Interval: 0.5 sec.

Gas Chromatograph: GC-8A Serial No. C10494419420SA

**Detector Range: 10** 

	Gases	
	Press.	Flow
	psi	mL/min
$H_2$	30	50
Air	30	60
Carrier	50	30

Temperatures, °C

Column: 100

Detector: 120

Columns

Primary: 3' Secondary:

Sample Loop: 6" unlined

**Injection Cycle** 

Total Length: 180 sec

Sampling Time: 160 sec

Load/Backflush Time: 85 sec

**Default Integration Parameters** 

Signal Threshold 0.67 mv Peak detection window ±10 sec Minimum peak area 5 mv-sec Minimum peak height 5 mv above baseline

**Dynacalibrator** 

Chamber Temperature 130.0°C **Ambient Temperature** 72.0°F Barometric Pressure 29.70 in. Hg

Number 7

Client: New Indy
Location: Catawba, SC
Source: Paper Machine Vent (Control of the Control of the

Method 16 Calibration 1 Project Number: **15730.001.008**Operator: **VD**Date: **26 Jun 2021** 

	Time o'	H <sub>2</sub> S		MeSH		D	DMS		IDS	TRS	
	Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm	
	17:44	18765	7.81	<2	<0.05	<2	<0.05	<2	<0.02	7.81	
	17:47	19416	7.97	<2	< 0.05	<2	< 0.05	<2	< 0.02	7.97	
	17:50	18473	7.73	<2	< 0.05	<2	< 0.05	<2	< 0.02	7.73	
	17:53	18357	7.70	<2	<0.05	<2	<0.05	<2	<0.02	7.70	
-	Average		7.80		<0.05		<0.05		<0.02	7.80	



Number 1

Client: New Indy
Location: Catawba, SC
Source: Paper Machine vent 8

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Time	0	2	C	O <sub>2</sub>
Time	mv	%	mv	%
14:21:27	6775	20.2	-11	0.1
14:21:42	6776	20.2	-11	0.1
14:21:57	6776	20.2	-11	0.1
14:22:12	6777	20.2	-11	0.1
14:22:27	6777	20.2	-11	0.1
14:22:42	6777	20.2	-12	0.1
14:22:57	6777	20.2	-11	0.1
14:23:12	6776	20.2	-11	0.1
14:23:27	6778	20.2	-12	0.1
14:23:42	6777	20.2	-10	0.1
14:23:57	6777	20.2	-10	0.1
14:24:12	6777	20.2	-11	0.1
14:24:27	6778	20.2	-11	0.1
14:24:42	6777	20.2	-11	0.1
14:24:57	6777	20.2	-10	0.1
14:25:12	6778	20.2	-9	0.1
14:25:27	6778	20.2	-11	0.1
14:25:42	6778	20.2	-10	0.1
Avgs	6777	20.2	-11	0.1

Number 2

Calibration 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 8

Operat

Project Number: 15730.001.008

Operator: **VD** 

Time		O <sub>2</sub> CO <sub>2</sub>		O <sub>2</sub>	
Time	mv	%	mv	%	
15:30:53	6776	20.2	-11	0.1	
15:31:08	6777	20.2	-10	0.1	
15:31:23	6777	20.2	-11	0.1	
15:31:38	6776	20.2	-10	0.1	
15:31:53	6777	20.2	-11	0.1	
15:32:08	6778	20.2	-11	0.1	
15:32:23	6775	20.2	-11	0.1	
15:32:38	6777	20.2	-12	0.1	
15:32:53	6777	20.2	-12	0.1	
15:33:08	6777	20.2	-14	0.1	
15:33:23	6776	20.2	-13	0.1	
15:33:38	6777	20.2	-14	0.1	
15:33:53	6777	20.2	-16	0.1	
15:34:08	6776	20.2	-13	0.1	
15:34:23	6777	20.2	-13	0.1	
15:34:38	6778	20.2	-14	0.1	
15:34:53	6777	20.2	-12	0.1	
Avgs	6777	20.2	-12	0.1	

Number 3

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 8

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

	0	2	C	$O_2$
Time	mv	%	mv	%
16:29:58	6779	20.2	-9	0.1
16:30:13	6778	20.2	-8	0.1
16:30:28	6778	20.2	-7	0.1
16:30:43	6779	20.2	-7	0.1
16:30:58	6780	20.2	-8	0.1
16:31:13	6780	20.2	-8	0.1
16:31:28	6778	20.2	-8	0.1
16:31:43	6779	20.2	-7	0.1
16:31:58	6778	20.2	-8	0.1
16:32:13	6779	20.2	-7	0.1
16:32:28	6779	20.2	-8	0.1
16:32:43	6781	20.2	-8	0.1
16:32:58	6778	20.2	-8	0.1
16:33:13	6777	20.2	-8	0.1
16:33:28	6780	20.2	-7	0.1
16:33:43	6779	20.2	-9	0.1
16:33:58	6779	20.2	-8	0.1
16:34:13	6779	20.2	-8	0.1
16:34:28	6780	20.2	-8	0.1
16:34:43	6779	20.2	-8	0.1
16:34:58	6779	20.2	-8	0.1
16:35:13	6778	20.2	-7	0.1
16:35:28	6780	20.2	-9	0.1
16:35:43	6780	20.2	-9	0.1
16:35:58	6779	20.2	-8	0.1
Avgs	6779	20.2	-8	0.1

Number 4

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 8

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

-	0	2	C	$O_2$
Time	mv	%	mv	%
16:38:22	3393	10.2	3339	9.8
16:38:37	3316	9.9	3407	10.0
16:38:52	3315	9.9	3412	10.0
SG9168283B	AL C	<b>)2=10.</b> 1	2 (	CO2= 10.1
16:39:07	3312	9.9	3413	10.0
16:39:22	3312	9.9	3416	10.0
16:39:37	3311	9.9	3418	10.0
16:39:52	3310	9.9	3416	10.0
16:40:07	3311	9.9	3417	10.0
16:40:22	3311	9.9	3417	10.0
16:40:37	3309	9.9	3417	10.0
16:40:52	3311	9.9	3418	10.0
16:41:07	3309	9.9	3418	10.0
16:41:22	3310	9.9	3418	10.0
16:41:37	3310	9.9	3417	10.0
16:41:52	3311	9.9	3417	10.0
16:42:07	3311	9.9	3418	10.0
16:42:22	3312	9.9	3416	10.0
16:42:37	3313	9.9	3416	10.0
16:42:52	3315	9.9	3413	10.0
16:43:07	3317	9.9	3411	10.0
16:43:22	3316	9.9	3410	10.0
16:43:37	3321	10.0	3407	10.0
16:43:52	3334	10.0	3395	10.0
16:44:07	3363	10.1	3365	9.9
Avgs	3319	9.9	3409	10.0

#### **CALIBRATION DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 8

Project Number: 15730.001.008

Operator: **VD** 

Date: 26 Jun 2021

Start Time: 08:07

 $O_2$ 

Method: EPA 3A

Calibration Type: Linear Regression

	Calibration Results	
%	Cylinder ID	Result, mv
Zero	-	8
10.1 🗸	SG9168283BAL	3293
19.5 👅	CC454190	6574

**Curve Coefficients** 

**Slope** 336.6

346.4

Intercept -29 **Corr. Coeff.** 0.9998

CO<sub>2</sub>

Method: EPA 3A

Calibration Type: Linear Regression

Slope	Curve Coefficients Intercept	Corr. Coeff.	
% Zero 10.2 20.4	Cylinder ID - SG9168283BAL CC454190	Result, mv -32 3417 7035	
	Calibration Results		

-56



0.9999



#### **CALIBRATION ERROR DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vent 8

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 26 Jun 2021

Start Time: 08:07

 $O_2$ 

Method: EPA 3A Span Conc. 19.5 %

**Slope** 336.6

Intercept -29.2

Standard	Response	Result	Difference	Error	
%	mv	%	%	%	Status
Zero	8	0.1	0.1	0.5 🗸	Pass
10.1	3293	9.9	-0.2	-1.0	Pass
19.5	6574	19.6	0.1	0.5	Pass

Method: EPA 3A Span Conc. 20.4 %

**Slope** 346.4

Intercept -55.6





#### **METHODS AND ANALYZERS**

Client: New Indy Project Number: 15730.001.008

Location: Catawba, SC Operator: VD

Source: Paper Machine vent 8 Date: 26 Jun 2021

File: C:\Users\Trailer 271\Documents\New Indy\6-26-21b.cem Program Version: 2.2, built 3 Jul 2020 File Version: 2.04

Computer: DESKTOP-GQ0I9UV Trailer: 271
Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte O<sub>2</sub>

Method EPA 3A, Using Bias Analyzer Make, Model & Serial No. CAI 600 SN E07015-M

Full-Scale Output, mv 10000 Analyzer Range, % 20.0 Span Concentration, % 19.5

Channel 2

Analyte CO<sub>2</sub>

Method **EPA 3A**, Using Bias Analyzer Make, Model & Serial No. **CAI 600 SN E07015-M** 

Full-Scale Output, mv
Analyzer Range, %
Span Concentration, %
10000
25.0
20.4

VYESTON:





# VENT 1 (VOIDED DATA)

## **RUN SUMMARY**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vents

Method 16

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time 15:00

**End Time** 16:00

**Average Measured TRS Conc.** 

Recovery No. 2

**TRS Corrected for Recovery** 

0.67 **ppm** / 98.7 %

0.68 **ppm** /

# **RUN SUMMARY**

Number 2

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vents

Method 16

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

**End Time** 17:02 Start Time 16:02

**Average Measured TRS Conc.** 

Recovery No. 2

**TRS Corrected for Recovery** 

0.91 **ppm** 98.7 **%** 

0.92 **ppm** 

## **RUN SUMMARY**

Number 3

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vents

Method 16

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time 17:04

**End Time** 18:04

**Average Measured TRS Conc.** 

Recovery No. 2

**TRS Corrected for Recovery** 

0.92 **ppm** 98.7 **%** /

0.93 **ppm**<sup>/</sup>



Number 1

Client: New Indy Location: Catawba, SC

Source: Paper Machine Vents

Method 16 Calibration 1 Project Number: 15730.001.008 Operator: VD

Time	Time H <sub>2</sub> S			MeSH DMS				MDS	TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
15:00	15	0.28	13	0.32	<2	<0.12	<2	<0.037	0.60
15:03	132	0.83	<2	< 0.13	<2	< 0.12	<2	< 0.037	0.83
15:06	11	0.24	18	0.37	<2	< 0.12	<2	< 0.037	0.61
15:09	38	0.45	67	0.69	<2	<0.12	<2	< 0.037	1.14
15:12	69	0.60	5	0.21	<2	<0.12	<2	< 0.037	0.81
15:15	16	0.29	39	0.53	<2	< 0.12	<2	< 0.037	0.82
15:18	10	0.23	<2	< 0.13	<2	< 0.12	<2	< 0.037	0.23
15:21	7	0.19	<2	< 0.13	<2	<0.12	<2	< 0.037	0.19
15:24	10	0.23	23	0.42	<2	< 0.12	<2	< 0.037	0.64
15:27	52	0.52	19	0.37	<2	< 0.12	<2	< 0.037	0.90
15:30°	18	0.31	29	0.47	<2	<0.12	<2	< 0.037	0.77
15:33	13	0.27	21	0.39	<2	< 0.12	<2	< 0.037	0.66
15:36	50	0.51	31	0.48	<2	< 0.12	<2	< 0.037	0.99
15:39	9	0.23	<2	< 0.13	<2	<0.12	<2	< 0.037	0.23
15:42	5	0.16	19	0.38	<2	< 0.12	<2	< 0.037	0.54
15:45	24	0.36	6	0.21	<2	<0.12	<2	< 0.037	0.57
15:48	30	0.40	<2	< 0.13	<2	<0.12	<2	< 0.037	0.40
15:51	<2	<0.10	<2	<0.13	<2	< 0.12	<2	< 0.037	-
15:54	17	0.30	167	1.07	<2	<0.12	<2	< 0.037	1.37
15:57	44	0.48	52	0.61	<2	<0.12	<2	< 0.037	1.09
Average		0.34		0.33		<0.12		<0.037	0.67





Number 2

Client: New Indy Location: Catawba, SC

Source: Paper Machine Vents

Method 16 Calibration 1 Project Number: 15730.001.008
Operator: VD

Time		2S		SH	DI area	MS	DN area	/IDS ppm	TRS ppm
	area	ppm	area	ppm	ai ca	ppm	arca	- PPIII	
16:02	17	0.30	<2	< 0.13	<2	<0.12	<2	< 0.037	0.30
16:05	<2	< 0.10	<2	< 0.13	<2	< 0.12	<2	< 0.037	-
16:08	7	0.19	<2	< 0.13	<2	< 0.12	<2	< 0.037	0.19
16:11	113	0.77	<2	<0.13	194	1.05	<2	< 0.037	1.82
16:14	<2	< 0.10	12	0.31	<2	< 0.12	42	0.17	0.65
16:17	9	0.22	13	0.32	5	0.18	<2	< 0.037	0.72
16:20	11	0.24	<2	< 0.13	<2	< 0.12	45	0.18	0.59
16:23	35	0.43	4	0.19	81	0.69	8	0.07	1.46
16:26.	37	0.44	6	0.22	20	0.35	75	0.23	1.47
16:29	16	0.29	<2	< 0.13	<2	< 0.12	18	0.11	0.51
16:32	5	0.16	10	0.28	96	0.75	<2	< 0.037	1.20
16:35	<2	<0.10	77	0.74	<2	< 0.12	19	0.12	0.97
16:38	46	0.49	<2	< 0.13	<2	< 0.12	11	0.08	0.66
16:41	<2	< 0.10	31	0.48	45	0.52	34	0.15	1.31
16:44	21	0.34	21	0.39	63	0.61	16	0.10	1.55
16:47	21	0.34	36	0.51	6	0.20	87	0.24	1.54
16:50	6	0.19	26	0.44	<2	< 0.12	45	0.18	0.98
16:53	13	0.26	<2	< 0.13	<2	< 0.12	11	0.09	0.43
16:56	15	0.28	<2	< 0.13	13	0.28	54	0.19	0.95
16:59	79	0.64	4	0.18	<2	<0.12	<2	< 0.037	0.82
 Average		0.28		0.20		0.23		0.10	0.91 🗸





Number 3

Client: New Indy Location: Catawba, SC

Source: Paper Machine Vents

Method 16 Calibration 1 Project Number: **15730.001.008**Operator: **VD** 

	<b>-</b>		Me	SH	DI	MS	DN	MDS	TRS
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
17:0	4 59	0.56	<2	<0.13	<2	<0.12	<2	<0.037	0.56
17:0		0.36	20	0.39	39	0.48	<2	< 0.037	1.23
17:1		0.34	16	0.35	34	0.45	<2	< 0.037	1.15
17:1:		0.36	31	0.48	<2	<0.12	27	0.14	1.11
17:10	6 27	0.38	13	0.32	<2	< 0.12	<2	<0.037	0.69
17:1		0.59	<2	< 0.13	<2	< 0.12	<2	< 0.037	0.59
17:2:		0.23	33	0.50	<2	<0.12	46	0.18	1.08
17:2		<0.10	<2	< 0.13	19	0.35	<2	< 0.037	0.35
17:2		< 0.10	8	0.26	57	0.58	<2	< 0.037	0.84
17:3		0.14	37	0.52	23	0.38	<2	< 0.037	1.04
17:3		0.49	<2	< 0.13	72	0.65	<2	< 0.037	1.14
17:3		0.17	5	0.20	53	0.56	20	0.12	1.17
17:4		< 0.10	16	0.35	59	0.59	10	0.08	1.11
17:4		0.48	20	0.39	32	0.44	16	0.11	1.53
17:4		0.30	<2	< 0.13	26	0.40	27	0.14	0.98
17:4		0.36	<2	< 0.13	<2	<0.12	99	0.26	0.88
17:5		<0.10	13	0.32	12	0.28	<2	< 0.037	0.60
17:5		0.28	4	0.18	10	0.25	24	0.13	0.96
17:5		0.37	5	0.20	21	0.36	36	0.16	1.25
18:0		<0.10	<2	<0.13	<2	<0.12	16	0.10	0.21
Avera	ge	0.27		0.22		0.29		0.07	0.92





## **RECOVERY DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vents

Method 16

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Before Run 1

Start Time 08:11

**End Time** 08:31

Recovery Gas to Probe, Time 08:11

Peak Areas, mv-sec

10815

11212

10554

Average

ppm 7.38

10860

Recovery Gas to GC, Time 08:26

Peak Areas, mv-sec

12058

12718

12683

**Average** / ppm 7.91

Recovery 93.3%

### **RECOVERY DATA**

Number 2

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vents

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

After Run 3

Start Time 18:08

**End Time** 18:27

Recovery Gas to Probe, Time 18:08

Peak Areas, mv-sec

13435

13768

13995

Average

ppm

13733 🗸 8.29

Recovery Gas to GC, Time 18:22

Peak Areas, mv-sec

13868

14119

14335

Average

ppm

14107 / 8.41

Recovery 98.7% /

# **CALIBRATION DATA**

Number 1

Client: New Indy

Project Number: 15730.001.008

Operator: **VD** 

Location: Catawba, SC
Source: Paper Machine Vents

Method 16

Ambient	Temperature: 72°C	Barometric P	Pressure: 29.30 in. h	Нg
Analyte	H <sub>2</sub> S	MeSH	DMS	DMDS
Perm. Device ID	T-51831	33-50536	89-50725	89-53405
Perm. Rate, nL/min	466	463	302	235
Ret. Time, sec	25.0	35.0	63.0	132.0
1 Flow = <b>42.9</b> mL/Min	<b>10.9</b> ppm	<b>10.8</b> ppm	<b>7.04</b> ppm	<b>5.48</b> ppm
Time: 06:01	того ррпп	Peak Area		отто ррин
1111101	23855	22293	10526	42673
	23215	21931	9998	42671
	22458	20868	9790	39883
Average Area	23176	21697 /	10105 /	41742
2 Flow = <b>73.0</b> mL/Min	<b>6.39</b> ppm	<b>6.34</b> ppm	<b>4.13</b> ppm	<b>3.22</b> ppm
Time: 07:11		Peak Area	s, mv-sec	
	8465	7583	3422	15009
	8597	7440	3304	15088
,	8224	7258	3241	15119
Average Area	8429 /	7427 /	3322	15072 /
3 Flow = 160 mL/Min	<b>2.91</b> ppm	<b>2.89</b> ppm	<b>1.89</b> ppm	<b>1.47</b> ppm
Time: 07:27		Peak Area	s, mv-sec	
	1616	1350	665	3068
	1680	1357	629	2997
	1609	1367	669	3070
Average Area	1635	1358	655	3045





## **CALIBRATION SUMMARY**

Number 1

Client: New Indy Location: Catawba, SC

Project Number: 15730.001.008

Source: Paper Machine Vents

Operator: **VD** 

Method 16

H₂S	1	2	3			9
Time	06:01	07:11	07:27			
Concentration, ppm	10.9	6.39	2.91			
Area, mv-sec	23176	8429	1635			
Calc. Conc., ppm	10.7	6.51	2.89			
% Error	-1.2	2.0	-0.8			
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.	
	2.0185	2.2831	0.9997	2	0.10	
	_,,,,,,,					
MeSH	1	2	3			
Time	06:01	07:11	07:27			
Concentration, ppm	10.8	6.34	2.89			
Area, mv-sec	21697	7427	1358 /			
Calc. Conc., ppm	10.7	6.44	2.88			(36)
% Error	-0.9	1.5	-0.6			
<b>Calibration Curve</b>	Slope	Intercept		Min. Area	Det. Lim.	
· ·	2.1084	2.1655	0.9998	2	0.13	
DMS	11	2	3			
Time	06:01	07:11	07:27			
Concentration, ppm	7.04	4.13	1.89			
Area, mv-sec	10105	3322	655			
Calc. Conc., ppm	7.05	4.13	1.89			
% Error	0.1	-0.2	0.1			
<b>Calibration Curve</b>	Slope	Intercept		Min. Area	Det. Lim.	
	2.0770	2.2430	>0.9999	2	0.12	
DMDS	1	2	3			
Time	06:01	07:11	07:27			
Concentration, ppm	5.48	3.22	1.47			
Area, mv-sec	41742		3045			
Calc. Conc., ppm	5.44	3.26	1.46			
% Error	-0.8	1.3	-0.5			
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.	
	1.9911	3.1557	0.9999	. 2	0.037	
				=		

#### **ANALYTES AND STANDARDS**

Client: New Indy Project Number: 15730.001.008

Location: Catawba, SC Operator: VD

Source: Paper Machine Vents Method 16 Date: 22 Jun 2021

Analyte Molecular Weight	<b>H<sub>2</sub>S</b> 34.08	<b>MeSH</b> 48.11	<b>DMS</b> 62.14	<b>DMDS</b> 94.20
Retention Time, sec Peak Detection Window, sec	25.0 15.0	35.0 15.0	63.0 10.0	132.0 10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv Beginning Peak Width, sec	1 1.0	1 1.0	1 3.0	1 3.0
Ending Peak Width, sec	2.0	3.0	5.0	5.0
Permeation Device ID	T-51831	33-50536	89-50725	89-53405
Permeation Rate, ng/min	642 /	901	<b>/</b> 758	/ 895 /
Permeation Rate, nL/min*	461	458	299	233

Barometric Pressure: 29.60 in. Hg Ambient Temperature: 72 °F

No Oxygen Correction

 $PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^{\circ} + T_a) / T_s] \times (P_s / P_b)$ 

Where:

PR<sub>nl</sub> = Permeation Rate by volume, nL/min PR<sub>nq</sub> = Permeation Rate by weight, ng/min

V<sub>mol</sub> = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

 $\mathbf{W}_{mol}$  = Molecular Weight of compound

Ta = Ambient Temperature, °F

T<sub>s</sub> = Standard Temperature = 492°R (32 °F)

P<sub>s</sub> = Standard Pressure = 29.92 in Hg

P<sub>b</sub> = Barometric Pressure, in Hg

For example, H<sub>2</sub>S:

 $PR_{nl} = 642 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.60)$ 

= 461 nL/min

To calclate concentrations:

 $C = PR_{nl} / F_{d}$ 

Where:

**C** = Concentration, ppmv

PR<sub>nl</sub> = Permeation Rate by volume, nL/min

F<sub>d</sub> = Flow rate of diluent, mL/min

<sup>\*</sup>Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min.

Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

#### **INSTRUMENT INFORMATION**

Client: New Indy

Location: Catawba, SC

Source: Paper Machine Vents

Method 16

Project Number: 15730.001.008

Operator: VD

Date: 22 Jun 2021

File: E:\New Indy\6-23-21.trs

Program Version: 2.0, built 15 May 2017 File Version: 2.0

Computer: JWS-PROGRAMMING Trailer: 271

Analog Input Device: Keithley KUSB-3108

GC Channel: 16

Sampling Rate: 0.050 sec.

Data Interval: 0.5 sec.

Gas Chromatograph: GC-8A Serial No. C10494419420SA

**Detector Range: 10** 

	Gases		Temperatures, °C	Columns
	Press.	Flow mL/min	Column: 100	Primary: 3'
H <sub>2</sub>	30	50	Detector: 120	Secondary:
Air	30	60		Sample Loop: 6" unlined
Carrier	50	30		

#### **Injection Cycle**

Total Length: 180 sec Samp

Sampling Time: 160 sec

Load/Backflush Time: 85 sec

#### **Default Integration Parameters**

Signal Threshold 0.67 mv Peak detection window ±10 sec Minimum peak area 2 mv-sec Minimum peak height 1 mv above baseline

#### **Dynacalibrator**

Chamber Temperature 130.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.60 in. Hg

	S	Н	1 00:00 1	9000			COMMENTS													Yel					V <sub>m-std</sub> ,	
Page 1 of 1	Factor MA	Initial	0	THE PLANT OF THE P	110		SAMPLE TRAIN VACUUM	(in Hg)	W	M	M	N	~	W	3	3	3	3	3	3	3	3	3	3	Max Vac	
	X III		Volume, ft <sup>3</sup>	Pitot	2	3	IMPINGER	EMIF	55	53	24	15	52	53	54	59	57	99	57	57	58	58	59	58	Max Temp	
	<sub>D</sub> O <sub>N</sub>				Filter ID		FILTER	EMP(F)	MA														17	<b>&gt;</b>	Min/Max	-
	24. °F 24.5% in. Hg	7	7.5 9	13.64 H2	-		FILTER BOX	LEWIT (FF)	1991	265	263	764	268	267	368	767	267	264	264	261	266	267	267	266	241/25 261/268	A CAM
				Area 13.	se Points		PROBE TEMP (°F)		253	256	25%	253	253	127	152	253	249	250	251	252	251	253	262	253	241/25	
oisture	Ambient Temp. Baro. Pressure* Static Pressure	Impinger Gain	Silica Gel Gain	Stack Area	Total Traverse Points		DGM	LEIMIP ( F)	89	83	88	88	89	88	90	90	90	90	90	90	90	89	90	10		0010
4 4, Mc	A 8 8				in To		DGM INLET	( L)	AN														( )		89.4m	
Method: EPA 4, Moisture	A23	19-19	780	4-23			STACK TEMP	( )	173	120	hel	174	177	172	172	171	169	172	173	173	173	173	173	173	Avg Ts.	
Metho		76	terial S	1	ams.		DRY GAS METER READING (ft³)	5/3.550	515.6	J17.4	5.8.3	521.3	623-2	525.1	526.9	518.84	530.8	632.8	534.7	536.7	538,6	540.5	542.5	544,528	36.978	C
	Console ID Meter Corr., Y Console ∆H@	Probe ID/Length	Liner Material	Thermo II	Nozzle ID/Diams Avg. Nozzle Diam		ORIFICE PRESSURE AH	(in. H <sub>2</sub> O)	1.3	1.3	1.3	1.3	1.3	1.3	(.3	1.3	1.3	1.3	1.3	1.3	(,)	1.3	1.3	1.3	Avg AH /. 360 //	1411
	New Indy Catawba, SC 1 Hood Exhaust	<i>f</i>	01.008	121	Min.		VELOCITY PRESSURE	(in. H <sub>2</sub> O)	49'	€0,	po'	40	40.	40.	.03	03	40.	40.	40.	.03	.02	.03	,03	40.	Avg VAP	1 769.
ld Data	New Indy Catawba, S No. 1 Hood Ex	Root	15730.001.008	6/13/2	18 /s		TIME (plant time)	16:04																1654	Barometric Pressure is at port elevation	
tic Fie	Client Cocation/Plant Source	ocation	W. O. Number	Date	est Personnel		SAMPLE TIME (min)	0	က	9	0	12	15	18	21	24	27	30	33	36	39	42	45	48	tric Pressure is	
<b>Isokinetic Field Data</b>	Locatic	Sample Location	W. O.		Test Personnel Sample Time		TRAVERSE POINT		A-1	2	3	4	5	9	2	80	B-1	2	ဇ	4	S	9	7	8	*Barome	

Pulp Drier, is Paper Machine, #2-3 SE Va & #1-2 CBs Emission Report

Calculated by QC by

Result

V<sub>m-std</sub>, Qs, dscfm % Isokinetic

Thermocouple Check

Avg VAP

O<sub>2</sub>/CO<sub>2</sub> by Orsat Fyrite M3A

Flue Gas Composition

Carbon Dioxide, % Moisture, %

Oxygen, %

1402 Avg √∆H

Comments

Integrated Air Services

Leak Check, Pre-run

Post-run

Meter Temp., °F Ref. Temp, °F

				Final	0.000	6				COMMENTS				
Page 1 of 1	1/2	who	Leak Checks	Initial	D.00K	12.	Good		1	SAMPLE	(in Hg)	3	w	•
Pag	K Eactor	וא ו מכוני	Le		Volume, ft <sup>3</sup>	@ Vac., in. Hg	Pitot	NA	10 Pun	S IMPINGER EXIT .	TEMP (°F)	56	56	-
		D	ا ور		>	0	Ы	Filter ID	Sample ID	FILTER	TEMP (°F)	Na		
	1° 18	Baro. Pressure* 29.5% in. Hg	0/ in. H <sub>2</sub> 0	5 8 mL	6 /		64 H2		16	FILTER	TEMP (°F)	260	197	1110
	emp.	sure* 29.	Static Pressure -, O/	Impinger Gain 125	Gain 8		Stack Area /264 ft <sup>2</sup>	7	Total Traverse Points 16	PROBE	ובואור ( ר)	253	266	
Method: EPA 4, Moisture	Ambient Temp.	Saro. Pres	Static Pres	Impinger	Silica Gel Gain		Stack		otal Trave	DGM OUTET	TEMP (°F) TEMP (°F)	83	50	,
A 4, M				BANK PARK		4			in. T	DGM	TEMP (°F	NA		
od: EP	4023	,003	. 800	10		0.84	4023		Q	STACK	(P)	185	181	,
Meth		1	1	gth	irial &	eff.		ms.	am250	DRY GAS METER READING (ft³)	450.550	452.6	454.5	10 10.11
	Console ID	Meter Corr., Y	Console ∆H@	Probe ID/Length	Liner Material	Pitot ID/Coeff.	Thermo ID	Nozzle ID/Diams.	Avg. Nozzle Diam.	ORIFICE PRESSURE	(in. H <sub>2</sub> O)	1.3	1.3	
	New Indy	Catawba, SC	No. 1 Hood Exhaust	v	15730.001.008		123/21	IBE	min.	VELOCITY	(in. H <sub>2</sub> O)	po.	40.	
d Data	New	Cataw	No. 1 Hoo	Roof	15730.0		6/2	Ben	84	CLOCK TIME (plant time)	15:00			
tic Fiel	Client	Location/Plant	Source	ocation	W. O. Number	Run Number	Date	Test Personnel	Sample Time	SAMPLE TIME (min)	0	က	9	
<b>Isokinetic Field Data</b>		Locatic		Sample Location	W. O. I	Run		Test Pe	Samp	TRAVERSE	NO	A-1	2	

									100					
9	CLOCK TIME (plant time)	VELOCITY PRESSURE	ORIFICE PRESSURE	DRY GAS METER READING (ft³)	STACK	DGM	DGM OUTET	PROBE TEMP (°F)	FILTER BOX	FILTER	IMPINGER EXIT	SAMPLE TRAIN VACUUM	COMMENTS	Ø
1	15:00	(in. H <sub>2</sub> O)	(in. H <sub>2</sub> O)	450.550	('F)	TEMP (*F)	TEMP (*F)		IEMP ("F)	TEMP ('F)	LEMP (*F)	(in Hg)		
1		po.	1.3	452.6	581	NA	88	283	266	NA	56	n		
		40.	1.3	454.5	181		88	266	197		56	W		
		50'	1.3	451.4	190		90	261	707		53	8		H
		40,	1.3	458.2	06/		90	492	263		34	10		
		,03	1.3	460.1	179		16	253	244		54	~		
		.03	1.3	462.0	180		25	787	222		75	M		
		. 03	6.3	464.0	179		42	256	268		56	W		
		700'	1.3	anh	511		93	757	267		57	S		
		,05	1.3	4.7.9	141		44	253	264		60	~		
		70,	1.3	8.697	180		94	252	717		9	8		
		ho.	1.3	8.11.4	08/		75	255	265		53	n		
		, 63	1.3	473.7	181		9%	384	266		55	m		
		10'	1.3	8.514	181		96	256	266		5.4	40		
-		8	1.3	477.7	211		36	251	245		وا	W		
		.03	1.3	8.564	176		95	253	266		63	n		
		.03	1.3	481.733	173	>	35	755	1264	*	64	3	/	
100	*Barometric Pressure is at port elevation	Avg \\ \delta \\ 1892.	/ Avg AH	Total Volume	Avg T <sub>s</sub>	A	Avg Tm 4	Min/Max 251/266	Min/Max 260/168	Min/Max	Max Temp	Max Vac	V <sub>m-std</sub> ,	
	5	. 0363	Avg 'AH 1.1402	Flue Gas Co			0 <sub>2</sub> /CO <sub>2</sub> Leak Che	1 O		The	Thermocouple Check Meter Temp., °F	Check	Q <sub>s</sub> , dscfm % Isokinetic	Pulp Di
	Comments	nents		Carbon Dioxide, %	oxide, %			Post-run		œ	Ref. Temp, °F		İ	ver, #
	Integrated Air Services			Moisture, %	%						Result		ac by	1573 Paper TVs &
														0.001.008 Machine, #1-2 CBs n Report

	Final 7		COMMENTS																	V <sub>m-std</sub> , scf	Q <sub>s</sub> , dscfm a	1	15730. Paper M IVs & # Emission	0.001.008 Machine, i1-2 CBs in Report
Page 1 of 1	K Factor M/A Leak Checks Initial Initial Initial 1. 113	447	SAMPLE TRAIN VACUUM (in Hg)	3	<b>M</b>	8	m	W	N	23	n	ev	w	2	3	3	2	W	13/	Max Vag	Check	Calcula		
	K P Volume, ft <sup>a</sup> @ Vac., in		IMPINGER EXIT TEMP (°F)	65	63	29	27	09	2%	ec	67	5-5	65	63	63	63	63	カタ	65	Max Temp	Thermocouple Check Meter Temp°F	Ref. Temp, °F	Result	
	7- in. Hg in. H <sub>2</sub> O mL g	Filter	FILTER EXIT TEMP (°F)	MIA															>	Min/Max	The second	•		
	24.55 in. Hg s.1 in. H <sub>2</sub> C 		FILTER BOX TEMP (°F)	260	263	240	592	265	764	202	963	266	265	266	265	200	265	266	265	Min/Max v 260/264	Fyrite M3A			
		D 0	PROBE TEMP (°F)	754	252	255	22	157	257	154	254	253	255	452	757	262	253	253	153	25) [25]	i di	Post-run		
Moisture	Ambient Temp. Baro. Pressure* Static Pressure Impinger Gain Silica Gel Gain	Total Traverse	DGM OUTET ) TEMP (°F)	16	90	30	38	88	Z.	88	80	68	83	90	600	83	90	68	89	Avg Tm SQ. 0	O <sub>2</sub> /CO <sub>2</sub>			
4		i.i.	DGM INLET TEMP (°F)	NA															>	>	tion			
Method: EPA	4623 8600 8600	(79)	R STACK TEMP (°F)	173	179	(7)	111	126	120	174	162	170	175	175	175	174	172	1,72	TLV	NA C	S S	Carbon Dioxide, %	% 'e' %	
Meth	9R-6	.250	DRY GAS METER READING (ft³)	483.8	8.584	7.187	5.584	9.16/	493.2	495.5	4.697.4	499. 3	561.2	503.1	505. 1	507.1	504.0	511,0	512,981	Total Volume	Flue Gas Co	Carbon	Moisture, %	
	Console ID Meter Corr., Y Console △H@ Probe ID/Length Liner Material Pitot ID/Coeff.	Nozzle ID/Diams. Avg. Nozzle Diam.	ORIFICE PRESSURE AH (in. H <sub>2</sub> O)	1.3	[.3	(.3	(,3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.5	1.3	5,1	Avg AH	Avg JOH			
	New Indy Catawba, SC 1 Hood Exhaust 2	min.	VELOCITY PRESSURE Ap (in. H <sub>2</sub> O)	ho'	185	10.	190'	40.	,04	,02	.02	40.	. 33	.03	.03	40.	400	.03	03	Avg VAP	,03563	Comments		
ld Data		854   Bu	CLOCK TIME (plant time)																1652	*Barometric Pressure is at port elevation	5		,	
tic Fie	Client Location/Plant Source ample Location W. O. Number Run Number	Test Personnel Sample Time	SAMPLE TIME (min)	6	9	6	12	15	18	21	24	27	30	33	36	39	42	45	48	etric Pressure i	STEEL STEEL	SNOTHINGS	Integrated Air Services	
<b>Isokinetic Field</b>	Client Location/Plant Source Sample Location W. O. Number Run Number	Test Pe Samp	TRAVERSE POINT NO.	A-1	2	ဗ	4	2	9	7	∞	B-1	2	ю	4	5	9	7	80	*Barom	WA	3	Integrat	322

# Sample Recovery Field Data

Method: EPA 4, Moisture

	Client/Plant	New Indy Catawba, SC			Source W.O. Number		Hood Exhau 30.001.008	
		Impii	ngers 1 - 3 measui	ements in gra	ms			
Run No.	1		Sample Date		Reco	overy Date		
Sample ID			Filter ID	NA		Analyst	BEALT	差
			<u> </u>	npingérs		9-7-1		
Contents	420	2 H20	3			Imp.Total	Silica Gel	Total
Final	848.L		Engty				grams	
Initial	752.4	635.8	550.0				901.6	
Gain	96.2	25.8	546.2			1250	893.5	1220
			3.8 /			125.8	8.1	133.8
	pinger Color		A MARINE TO A		Labled?	/		
Silica G	el Condition	Good			Sealed?			z i lagi.
Run No.	2		Sample Date		Reco	overy Date		
Sample ID			Filter ID	NA		Analyst	BE4/2	E
				pingers		L. ILA		
Contents	1	2	3			Imp.Total	Silica Gel	Total
Final	H20 850.8	1/20	Engly				grams	
Initial		849.2	637.9				868.9	
Gain	746.0	804.1	628.0				857.8	BIG
ALC: ALC: ALC: ALC: ALC: ALC: ALC: ALC:	105.8	45.11	9.9 V				11-1	171.9
Miles and the second	oinger Color				Labled?	/		
Silica G	el Condition <u>G</u>	ool			Sealed?			in the late
			V/	A THE RESERVE				
Run No.	3		Sample Date		Pecc	very Date		
Sample ID			Filter ID	NIA		Analyst	BEAL.	BÉ
			In	pingers			7	
Cantanta	1	2	3		The same of the same of	Imp.Total	Silica Gel	Total
Contents	H <sub>L</sub> D	M20	Engh				grams	
Final	913.3	647.2	5540				909.1	No. 10
Initial	784.0	630.1	550.0			/	901.6	
Gain	129.3	17.11	4.0			150.4	7.5/	157,9
Imp	oinger Color				Labled?	/		1
Silica G	el Condition				Sealed?	/		
		Che	eck COC for Sample ID	s of Media Blanks	s /			



SAMMI Hot Box NOVYLE BOX Ratchet Strap

		, Angle	
Cooled & WARK	Detta P	A STATE OF THE STA	Tenf
/.	.02	7	784 289 184
	.00	0	280 190
3.	.00	0	280 192
4.	.00	0	192
5.	02	6	193
6	02	6	192
7	.04		190
		/2	194
8.	. 05	14	184
9. ,	62	7	193
10.	.04	12	193
/ /	, 05	15	193
12.	00	0	

450. 135

Number 1

Calibration 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vents

Onei

Project Number: 15730.001.008

Operator: **VD** 

	Time	0	2	C	O <sub>2</sub>	
	Time	mv	%	mv	/ %	
300	Paner	Machin	e Vernt	1 Ru	ın 1	
	16:35:26	6778	20.2	0	0.2	
	16:35:41	6781	20.2	-2	0.2	
	16:35:56	6780	20.2	-2	0.2	
	16:36:11	6781	20.2	-1	0.2	
	16:36:26	6782	20.2	-4	0.2	
	16:36:41	6782	20.2	-3	0.2	
	16:36:56	6782	20.2	-5	0.2	
	16:37:11	6785	20.2	-4	0.2	
	16:37:26	6782	20.2	-4	0.2	
	16:37:41	6783	20.2	-4	0.2	
	16:37:56	6783	20.2	-5	0.2	
	16:38:11	6782	20.2	-2	0.2	
	16:38:26	6783	20.2	-4	0.2	
	16:38:41	6783	20.2	-3	0.2	
	16:38:56	6781	20.2	-2	0.2	
	Avgs	6782	20.2	-3	0.2	



Number 2

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vents

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021 Calibration 1

Time	0	2	C	<b>D</b> <sub>2</sub>
Time	mv	%	mv	%
19:02:02	6782	20.2	-4	0.2
Paper	r Machi	ne Vent	1 Run	2
19:02:17	6781	20.2	-5	0.2
19:02:32	6778	20.2	-6	0.2
19:02:47	6781	20.2	-4	0.2
19:03:02	6782	20.2	-5	0.2
19:03:17	6781	20.2	-1	0.2
19:03:32	6781	20.2	-3	0.2
19:03:47	6780	20.2	-3	0.2
19:04:02	6780	20.2	-5	0.2
19:04:17	6781	20.2	-5	0.2
19:04:32	6777	20.2	-4	0.2
19:04:47	6781	20.2	-5	0.2
19:05:02	6780	20.2	-2	0.2
19:05:17	6780	20.2	-3	0.2
19:05:32	6778	20.2	-1	0.2
19:05:47	6762	20.2	12	0.2
Avgs	6779	20.2	-3	0.2

Number 3

Calibration 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vents

Project Number: 15730.001.008

Operator: **VD** 

Time	0	2	C	<b>D</b> <sub>2</sub>
Time	mv	%	mv	%
19:06:16	6780	20.2	-1	0.2
Paper	r Machi	ne Vent	1 Run	3
19:06:31	6780	20.2	-2	0.2
19:06:46	6781	20.2	-2	0.2
19:07:01	6780	20.2	-2	0.2
19:07:16	6781	20.2	-2	0.2
19:07:31	6782	20.2	-2	0.2
19:07:46	6781	20.2	-2	0.2
19:08:01	6781	20.2	-2	0.2
19:08:16	6780	20.2	-3	0.2
19:08:31	6779	20.2	1	0.2
19:08:46	6780	20.2	1	0.2
19:09:01	6782	20.2	-0	0.2
19:09:16	6781	20.2	-0	0.2
19:09:31	6780	20.2	1	0.2
19:09:46	6781	20.2	2	0.2
19:10:01	6781	20.2	4	0.2
19:10:16	6781	20.2	1	0.2
19:10:31	6781	20.2	-1	0.2
19:10:46	6781	20.2	1	0.2
19:11:01	6779	20.2	1	0.2
19:11:16	6780	20.2	2	0.2
Avgs	6781	20.2	-0	0.2

#### **CALIBRATION DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vents

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time: 13:37

 $O_2$ 

Method: EPA 3A

Calibration Type: Linear Regression

% Zero 10.1 // 19.5	Calibration Results Cylinder ID  - SG9168283BAL CC454190	<b>Result, mv</b> 46 3296 6582	
<b>Slope</b> 335.0	Curve Coefficients Intercept	Corr. Coeff. 0.9997	_

 $CO_2$ Method: EPA 3A

Calibration Type: Linear Regression

	Calibration Results		
%	Cylinder ID	Result, mv	
Zero	-	-36	
10.2 🗸	SG9168283BAL	3110	
10.2 20.4	CC454190	6430	
	Curve Coefficients		
Slope	Intercept	Corr. Coeff.	
317.0	<b>-61</b>	0.9999	/



#### **CALIBRATION ERROR DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: Paper Machine vents

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Calibration 1 Start Time: 13:37

 $O_2$ 

Method: EPA 3A Span Conc. 19.5 %

**Slope** 335.0

Intercept 2.5

Standard %	Response mv	Result	Difference %	Error %	Status
Zero	46	0.1	0.1	0.5 🗸	Pass
10.1	3296	9.8	-0.3	-1.5	Pass
19.5	6582	19.6	0.1	0.5	Pass

CO<sub>2</sub>

Method: EPA 3A Span Conc. 20.4 %

**Slope** 317.0

Intercept -60.9



#### METHODS AND ANALYZERS

Client: New Indy

Project Number: 15730.001.008

Location: Catawba, SC

Operator: **VD** 

Source: Paper Machine vents

Date: 23 Jun 2021

File: C:\Users\Trailer 271\Documents\New Indy\6-23-21.cem Program Version: 2.2, built 3 Jul 2020 File Version: 2.04

> Computer: DESKTOP-GQ0I9UV Trailer: 271 Analog Input Device: Keithley KUSB-3108

#### **Channel 1**

Analyte  $O_2$ 

Method EPA 3A, Using Bias Analyzer Make, Model & Serial No. **CAI 600 SN E07015-M** 

Full-Scale Output, mv 10000 Analyzer Range, % 20.0 Span Concentration, % 19.5

#### Channel 2

Analyte CO<sub>2</sub>

Method EPA 3A, Using Bias Analyzer Make, Model & Serial No. CAI 600 SN E07015-M

Full-Scale Output, mv 10000 Analyzer Range, % 25.0 Span Concentration, % 20.4



# APPENDIX E FIELD DATA – No. 2 AND 3 SMELT DISSOLVING TANK VENTS

New Indy Catawba, SC 15730.001.008 No. 2 & 3 SDTV

#### **EMISSION CALCULATIONS**

Date Time Began Time Ended		Run 1 6/27/21 / 1100 1210	Run 2 6/27/21 / 1222 1331	Run 3 6/27/21 1344 1454	Mean
Volumetric Flow Rate, (Qs), DSCFM BWS % Oxygen Recovery, %		2.60E+04 0.392 20.1 91.9	2.61E+04 0.412 20.0 91.9	2.54E+04 0.409 20.3 91.9	2.58E+04 0.404 20.1 91.9
Total Reduced Sulfur (TRS MW)=  Concentration, ppm Emission Rate, lb/hr	34.08	7.42 1.02	9.24 1.28	8.24 1.11	8.30 1.14
H2S (H2S MW)=  Concentration, ppm Concentration, ppm (Corrected for Reco	34.08 overy)	5.56 6.05 0.84	6.99 7.61 1.05	6.43 7.00 0.94	6.33 6.88 0.94



New Indy Catawba, SC 15730.001.008 No. 2 & 3 SDTV

ISO	KINET	C	CAL	CUL	ATIONS

	ISOKINETIC CALC		2	2	Mean
Run Number		1	2	3	Mean
Date		6/27/21	6/27/21	6/27/21	
Time Began		1100	1222	1344	
Time Ended	DIDLIT DA	1208	1332	1451	
	INPUT DA		64	64	64
Sampling Time, min	(Theta)	64.0		71	71
Stack Diameter, in.	(Dia.)	71	71		29.40
Barometric Pressure, in. Hg	(Pb)	29.40	29.40	29.40 -0.16	<b>-</b> 0.16
Static Pressure, in. H2O	(Pg)	-0.16	-0.16	0.84	0.84
Pitot Tube Coefficient	(Cp)	0.84	0.84		1.0000
Meter Correction Factor	(Y)	1.0000	1.0000	1.0000	
Orifice Calibration Value	(Delta H@)	2.0490	2.0490	2.0490	2.0490
Nozzle Diameter, in.	(Dn)	0.250	0.250	0.250	0.250
Meter Volume, ft^3	(Vm)	39.637	39.229	39.027	39.298
Meter Temperature, °F	(Tm)	103.3	101.8	98.8	101.3
Meter Temperature, °R	(Tm-R)	563.3	561.8	558.8	561.3
Meter Orifice Pressure, in. H2O	(Delta H)	1.300	1.300	1.300	1.300
Ave Sq Rt Orifice Press, (in. H2O) <sup>1</sup> / <sub>2</sub>	((Delta H)½)avg)	1.140	1.140	1.140	1.140
Volume H2O Collected, mL	(Vlc)	519.8	541.0	558.9	539.9
CO2 Concentration, %	(CO2)	0.0	0.0	0.0	0.0
O2 Concentration, %	(O2)	20.1	20.0	20.3	20.1
Ave Sq Rt Velo Head, (in. H2O) <sup>1</sup> / <sub>2</sub>	((Delta P)½)avg)	0.469	0.486	0.469	0.475
Stack Temperature, °F	(Ts)	167.5	170.1	169.4	169.0
Stack Temperature, °R	(Ts-R)	627.5	630.1	629.4	629.0
Moisture Fraction (at Saturation)	(BWS)	0.392	0.416	0.409	0.406
CALC	CULATED DATA				
Nozzle Area, ft <sup>2</sup>	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft <sup>2</sup>	(As)	27.49	27.49	27.49	27.49
Stack Pressure, in. Hg	(Ps)	29.39	29.39	29.39	29.39
Meter Pressure, in. Hg	(Pm)	29.50	29.50	29.50	29.50
Standard Meter Volume, ft <sup>3</sup>	(Vmstd)	36.615	36.331	36.342	36.429
Standard Water Volume, ft <sup>3</sup>	(Vwstd)	24.467	25.465	26.307	25.413
Moisture Fraction (Measured)	(BWS)	0.401	0.412	0.420	0.411
Moisture Fraction (lower sat/meas)	(BWS)	0.392	0.412	0.409	0.404
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	28.80	28.80	28.81	28.81
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	24.57	24.35	24.39	24.44
Average Stack Gas Velocity, ft/sec	(Vs)	31.40	32.72	31.59	31.90
Stack Gas Flow, actual, ft <sup>3</sup> /min		51795	53982	52110	52629
Stack Gas Flow, Std , ft <sup>3</sup> /min	(Qa)				
Stack Gas Flow, Std , It /min	(Qs)	26017	26110	25364	25830
Calibration check	(Yqa)	1.0072	1.0165	1.0187	1.014
Percent difference from Y	(* 40)				1.41%



Page 1 of 1	K Factor N)K	2000		Initial Final	olume, ft <sup>3</sup> .005 .000	Vac., in. Hg	tot ,000 ,000	*2	10 Run 1
Method: EPA 4, Moisture	Console ID ADDS Ambient Temp. 46 °F 70 40	たら	Console △H@	Probe ID/Length 7119 81 Impinger Gain 509.5 mL 519.8	Silica Gel Gain 10 i	0426 0.84	Thermo ID A025 Stack Area 27,4 ft2 Pil	1D/Diams350 ,250 ,250 ,250	Sample ID state Diam. 150 in. Total Traverse Points 16 Sample ID
Isokinetic Field Data	Client New Indy	Location/Plant Catawba, SC Me	Source SDTV Cc	start outlet			(1)1/17	Test Personnel (ACM / L/13 F Nozzl	Sample Time 64 min. Avg. Nozzle Diam.

ט טעצ										The second second	SAMPLE	
e (e	11/2 ( 25)	OKIFICE PRESSURE AH	READING (ft.)	¥ .	DGM	DGM OUTET	PROBE TEMP (°F)	FILTER BOX TEMP (°E)	FILTER EXIT TEMP (°E)	IMPINGER EXIT TEMP (°F)	TRAIN	COMMENTS
11,00 (in. H <sub>2</sub> 0)	THE REAL PROPERTY.	(in. H <sub>2</sub> O)	941.700	('F')	(F)	IEMP(F)					(in Hg)	
117		1,3	2,494,3	166		102	260	265	/	67	2.5	
81:		1,7	9.66.6	791		102	764	261		99	2,5	
		13	498.7	491		103	265	260		e	2,5	
200	_	1,3	1001.7	163		h91	265	262		65	~	
724	_	5'	1.4001	164		101	764	262		65	2	
386		1,7	1006,6	166		hol	263	268		63	N	
35		1,3	1006,1	1991		164	262	267		و	N	
11:32 , 22		1.3	1011.5	191		163	264	265		00	M	
11:38 .21		1,7	1.1101	69-		163	263	263		65	2	
. 23		1,3	iol7.1	701		103	265	292		58	2	
,23		1,3	1018,4	169		163	241	792		28	2	
,23	_	5	5,1201	170		103	252	265		59	5	
75		1.1	1023,9	071		h91	252	264		28	2	*end
76		1,3	1026.5	17.1		103	253	261		56	5	volume
66.		1,3 047	8:8201	07)		201	254	265		63	7	1031,337
12:08 ,23	1	1.3 #	1621501	164	/	101	252	263		9	7	
1	10	Avg AH	Total Volume	Avg Ts. 7	Avç	Avg Tm 255	Min/Max V	Min/Max 264268	MinMax	Max Temp	Max Vac	V <sub>m-std</sub> ,
3206	12	Avg VAH	39.6 Oxygen, %	composition 6		O <sub>2</sub> /CO <sub>2</sub> Leak Che	O <sub>2</sub> /CO <sub>2</sub> by Orsat Fyrite M3A Leak Check, Pre-run	rite M3A	The	Thermocouple Check Meter Temp., °F	Check	
Comments			Carbon Dioxide, %	ioxide, %			Post-run		ď	Ref. Temp, °F Result		yer, #3 Par
									SACORE OF SACORE	COREC		5730,001.008 ber Machine, & #1-2 CBs ssion Report
									2	7:12		

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		TS																	Pulp Dryer #2-3 S	3 Paper 3 Paper 4 Vs., & Emissi	Machine, #1-2 CBs on Report	
	Final Final CO S	COMMENTS															1	scf Scf	Os, dscfm % Isokinetic Calculated by	Sa Sa		
Page 1 of 1	K Factor NA  Leak Checks  Leak Checks  Initial  ift 665  in. Hg 8  in. Hg 8  in. Hg 8	SAMPLE TRAIN VACUUM (in Hg)	~	N.	~ ~	2,7	3,5	3.5	7	7	5	77	5	4,5	4,5	5	37	Max Vac	Check		22	
		IMPINGER EXIT TEMP (°F)	99	15	25	22	2 2	28	19	59	59	63	63	69	64	65	66	Max Temp	Thermocouple Check Meter Temp., °F Ref. Temp, °F	Result	DW SCOHEC	į
	Hg Volu	FILTER EXIT TEMP (°F)															1	Mn/Max	Th Me		A	
		FILTER BOX TEMP (°F)	263	263	269	597	263	267	398	265	764	268	267	992	592	264		26-4268	yrite M3A			
	lent Temp. $\frac{6}{26}$ , $\frac{6}{46}$ in. c Pressure $\frac{26}{46}$ in. c Pressure $\frac{16}{16}$ in. ginger Gain $\frac{526.5}{14.5}$ ml a Gel Gain $\frac{14.5}{14.5}$ g Stack Area $\frac{37.44}{250}$ ft <sup>2</sup> Traverse Points 16	PROBE TEMP (°F)	246	348	3/2	251	250	251	250	258	258	254	360	258	259	234	1	246/254	O <sub>2</sub> /CO <sub>2</sub> by Orsat Fyrite Leak Check, Pre-run Post-run			
Moisture	Ambient Temp. 28 Static Pressure* 36 Impinger Gain 53 Silica Gel Gain 18 Stack Area 37 Stack Area 37 Total Traverse Points	DGM OUTET TEMP (°F)	401	70.	104	101	105	591	hol	100	101	166	2%	28	88	101	101	Avg Tm iol. St	O <sub>2</sub> /CO <sub>2</sub> Leak Che			
4,	8 B B S O O O O O O O O O O O O O O O O O	DGM INLET TEMP (°F)															/		u			
Method: EPA	2.5 0.006 0.	STACK TEMP (°F)	167	176	173	170	173	(75	173	170	170	121	891	169	167	167	191	Avg Ts.	lue Gas Composition Oxygen, % Carbon Dioxide, %	%		
Metho	012 63300	DRY GAS METER READING (It <sup>3</sup> )	100	36,5	34,0	177	46.5	44,6	51.3	1	56,3	58.7	1'19	63,8	65.9	h189	70,829	Total Volume	Flue Gas Composii Oxygen, % Carbon Dioxide, %	Moisture, %		
	Console ID Meter Corr., Y Console AH@ Probe ID/Length Liner Material Pitot ID/Coeff. Thermo ID Nozzle ID/Diams. Avg. Nozzle Diam.		3	63	- (%)	7 3	2	7	9	3 5			3 6	3 6	9 5			3	On Old			
	2 A	ORIFICE PRESSURE AH (in: H <sub>2</sub> O)	(,3	1,3	1, N	1,5	1,2	13	-	1	1,3	1,3	,		- 1	(1.3	, 1.3	AVB AH	ANG VAH			
	a, SC 6 LA/Let 51.008 7/2/ 1/2/ 1/2/ min.	VELOCITY PRESSURE Ap (in. H <sub>2</sub> O)	22	. 23	22	227	24	:27	,25	ok	,20	,20	,83	,25	36	, 25	12:	Avg VAP	1256 Step 1			
d Data	SDT SDT 15730.00	CLOCK TIME (plant time)					·		12:54	13:00							13:32	at port elevation	Comm	9		Data Chapte Version 7. Coovright © 2021 by Weston Solutions, Inc.
ic Field	Client Ocation/Plant Source Nous Location V. O. Number Run Number Date St Personnel	SAMPLE TIME (min)	4	œ	12	16	24	28	32	36	40	44	48	52	56	09	64	*Barometric Pressure is at port elevation	NON	Integrated Air Services		on 7. Coovright © 2021
<b>Isokinetic Field</b>	Client Location/Plant Source Sample Location W. O. Number Run Number Date Test Personnel Sample Time	TRAVERSE S POINT NO.	A-1	2	က	4	w w	2	80	B-1	2	8	4	2	9	7	80	*Barome	W.E.	Integrate	335	Data Shoots Vorsit

								April 1												Pulp	Dryer #2-3	Paj DIVs	5730.001.008 per Machine, , & #1-2 CBs ssion Report
	Final Final	COMMENTS																/	V <sub>m-std</sub> , scf	Qs, dscfm		QC by	ision Report
Page 1 of 1	Leak Checks Leak Checks Initial Ag 6	SAMPLE TRAIN VACUUM (in Hg)	5	5	7	5	5	7	5	4.5	4,5	45	3/2	4,5	6	N	15.7	2,5	Max Vac S.S.		Calcu		
d.	K Fa	IMPINGER EXIT TEMP (°F.)	64	29	52	56	26	58	58	90	65	19	00	64	19	49	65	59	Max Temp	Thermocouple Check	Ref. Temp, °F	Result	
	Filter II	FILTER EXIT TEMP (°F)	*															()	Min/Max	The	Re		
	29,40in. Hg 29,40in. Hg 548,4 mlx54,2 16,2 g 27,44 ft² Fi oints 16 Si	FILTER BOX TEMP (°F)	252	254	192	260	992	261	260	261	262	263	79%	261	262	263	hh	263	257/264	rite M3A			86.103
	wre* 29. 45 sure - 10 sain 549. 4 krea 27.4 krea 27.4 se Points	PROBE TEMP (°F)	256	257	256	257	236	255	h52	253	254	235	256	257	258	256	552	136	Min/Max 753/258	O <sub>2</sub> /CO <sub>2</sub> by Orsat Fyrite	Post-run		OW STATE
Moisture	Ambient Temp. % Baro. Pressure* 2,4 Static Pressure -,1 Impinger Gain 54 Silica Gel Gain 16,7 Stack Area 2,7 O 1,250 Total Traverse Points	DGM OUTET TEMP (°F)	83	dd	67	41	88	88	Lb	83	66	6d	101	160	101	160	49	94	68. 25	02/CO2	Lean Oile	1 1	
4	7. 73	DGM INLET TEMP (°F)		0											ø				1-124 B	ion oi			- Tro
Method: EPA	4025 4006 4008 4008 40025 50	STACK TEMP (°F)	167	170	170	176	170	169	169	170	169	169	164	55	[2]	1/21	169	169	16 Qual 1	Composit	Carbon Dioxide, %	%	
Metho		DRY GAS METER READING (ft.)	73.8	76,2	78,9	81,6	83.2,	248	5.88	9.0%	93,3	45.5	68.6	160 G	102,9	105,1	19,8	116,127	Total Volume	Flue Gas Composition	Carbon Dio	Moisture, %	
	Console ID  Meter Corr., Y  Console AH@  Probe ID/Length Liner Material Pitot ID/Coeff. Thermo ID  Nozzle ID/Diams. Avg. Nozzle Diam.	ORIFICE PRESSURE AH (in. H <sub>2</sub> O)	1.3	1,3	1,3	1,3	(,3	2,1	7"1	1.3	1,7	1,3	1.3	(,3	(3	1,3	1.3	1,3	AV9 AH	AV9 VAH			
		VELOCITY PRESSURE Ap (in. H <sub>2</sub> O)	١١ ن	, 19	30	,22	,23	. 23	h2'	, 23	. 23	. 22	. 22	ンなっ	" sy	iss	. 22	,22,	120 vay	12061			
d Data	New Catawar 15730	CLOCK TIME (plant time)				, N				91:10	14:14							14,51	*Barometric Pressure is at port elevation	5	Comments	0	
tic Fiel	Client Source Source Mple Location W. O. Number Run Number Date est Personnel Sample Time	SAMPLE TIME (min)	4	00	12	16	20	24	28	32	36	40	44	48	52	56	09	64	stric Pressure is	7.5		Integrated Air Services	
<b>Isokinetic Field</b>	Client Location/Plant Source Sample Location W. O. Number Run Number Date Test Personnel	TRAVERSE POINT NO.	A-1	2	ю	4	22	9	7	80	B-1	2	ю	4	2	9	7	œ	*Barome	WY.	4 T	Integrate	336

### Sample Recovery Field Data

Method: EPA 4, Moisture

Contents		Client	New Indy			10/	Source		SDTV				
Run No. 1   Sample Date   G/27/21   Recovery Date   G/27/21   Sample ID   Dun 1   Filter ID   Nik   Analyst   ATTC	Location/	Plant					.O. Number	15/3	0.001.008				
Sample ID   Dun			Impir	ngers 1 - 3	3 measure	ements in grams							
Total   Tota	Run No.	1		Sam	ple Date	6/27/21	Recovery Date 6/27/21						
Impingers   Impingers   Importation   Silica Gel   Total   Grams   Final   9   9   9   16   22   6   70   1.5   608   2   9   733.3   1   1   1   1   1   1   1   1   1	Sample ID	Run 1			Filter ID	NA	Analyst ATR						
Contents						pingers							
Final		- melin-vi-		3 3				Imp.Total		Total			
Initial   7	Contents		DI					A STOCK	Mary State of the				
Gain   207   3   238   7   60.4   2.6   569.5   6.3   519.8     Impinger Color   200   200   2.6   2.6   2.7   2.1     Sample ID   10   10   2   3   3   4     Sample ID   10   2   3   3   4     Impingers   1   2   3   555.7     Initial   774.0   774.7   649.9   665.2   665.2     Initial   774.0   774.7   649.9   665.2   665.2     Impinger Color   200   200   200     Silica Gel Condition   200   200   200     Run No.   3   Sample Date   6/27/21   Recovery Date   6/27/21     Run No.   3   Sample Date   6/27/21   Recovery Date   6/27/21     Run No.   3   Sample Date   6/27/21   Recovery Date   6/27/21     Sample ID   10   10   10   10     Sealed?   10   10   10     Impinger Color   10   10   10     Impingers   1   2   3   4   10     Impinger Color   10   10   10     Impinger Color   10   10   10     Impinger Color   20   20   20     Impinger Color   20   20   20     Impinger Color   20   20   20   20   20     Impinger Color   20   20   20   20   20     Impinger Color   20   20   20   20   20   20   20     Impinger Color   20   20   20   20   20   20   20   2	Final	918.4	1622.6	707.8	608.2								
Impinger Color   Silica Gel Condition   Sealed?   Sample ID   Rum Q   Filter ID   N	Initial	711.1	783.9	646.4	665,6				923.6				
Impinger Color   Silica Gel Condition   Sealed?   Sample ID   Rum Q   Filter ID   N	Gain	207,3,	238.7					5095	10,3	519.8			
Sealed?   Sealed?   Sealed?   Sealed?   Sealed?   Sample ID   Recovery Date	lmp	oinger Color	dear	)			Labled?		/				
Run No.   2   Sample Date   6/27/21   Recovery Date   6/27/21   Sample ID   1/2							Sealed?						
Sample ID   Run 2   Filter ID   No.   Analyst   ATL													
Sample ID   Run 2   Filter ID   No.   Analyst   ATL	Run No.	2		Sam	ple Date	6/27/21	Reco	overy Date	61271	121			
Impingers   Imp.Total   Silica Gel   Total	Sample ID	Run 2											
Contents													
Final 98 .4 10 14.7 136.6 668.6  Initial 774.0 774.7 6449 6652  Gain 201.4 235 80.7 3.4 526.5 14.5 546  Impinger Color 164 Sample Date 6/27/21 Recovery Date 6/27/21  Sample ID 164 Silica Gel Total Silica Gel Total Grams  Final 923.6 973.1 714.3 55.9  Impinger Color 174.3 55.9  Impinger Color 175.1 71.3 2.4  Impinger Color 175.1 71.		1	2	3 3				Imp.Total	Silica Gel	Total			
Initial   774.0   774.7   646.9   66.5   7.5	Contents	D¥	bĪ	emply	emply				grams				
Contents   Standard	Final	981.4	1014.7	/	668.6	7 4 7 4		1	855.7				
Contents	Initial	774.0,	779,7	644.9	665	7			841.2				
Sealed?   Sealed?   Sealed?   Sealed?   Sealed?   Sealed?   Sample ID   No. 3   Sample Date   6/27/21   Recovery Date   6/27/21   Sample ID   No. 3   Filter ID   No. 4   Analyst   ATM   Impingers   Imp. Total   Silica Gel   Total   Grams   Final   4/23.0   4/3.1   7/4.3   5/45.9   6/3.0   6/3.0   5/3.3   5/48.6   8/49.3   Gain   2/59.6   2/15.1   7/1.3   2/4   5/48.6   8/49.3   5/48.6	Gain	201.41		80.7	3,4			526.5	14.5/	541			
Sealed?   Sealed?   Sealed?   Sealed?   Sealed?   Sealed?   Sample ID   No. 3   Sample Date   6/27/21   Recovery Date   6/27/21   Sample ID   No. 3   Filter ID   No. 4   Analyst   ATM   Impingers   Imp. Total   Silica Gel   Total   Grams   Final   4/23.0   4/3.1   7/4.3   5/45.9   6/3.0   6/3.0   5/3.3   5/48.6   8/49.3   Gain   2/59.6   2/15.1   7/1.3   2/4   5/48.6   8/49.3   5/48.6	Imi	oinger Color	clos				Labled?	C					
Run No.   3   Sample Date   6/27/21   Recovery Date   6/27/21		100000000000000000000000000000000000000		TOTAL:				-					
Sample ID   Num 3   Filter ID   Num 3   Analyst   At // Impingers	Silica G	el Condition	usec (				ocalca.						
Impingers   Imp. Total   Silica Gel   Total	Run No.	3		Sam	ple Date	6/27/21	Rec	overy Date	6/27	121			
Impingers   Imp. Total   Silica Gel   Total	Sample ID	Run 3			Filter ID	11/4		Analyst	ATR				
Total   Contents   DT   Empty empty   English   Gain   259.6   215.1   71.3   2.9   English	The state of the s								yelin sine				
Final $923.6$ $973.1$ $714.3$ $595.9$ $1320$ $9096$ Initial $663.4$ $758.0$ $643.0$ $593.3$ $548.6$ $899.3$ Gain $259.6$ $215.1$ $71.3$ $2.9$ $348.4$ $16.3$ $559.2$ Impinger Color $9.60$		1		3 :	4			Imp.Total	Silica Gel	Total			
Initial 663.4 758.0 643.0 593.3 548.6 899.3  Gain 259.6 / 215.1 / 71.3 2.9 548.4 16.3 559.2  Impinger Color 618.0 2.6 AB Labled?	Contents	DI	bI	emphy					grams				
Initial 663.4 758.0   643.0 593.3 548.6 899.3 548.6 899.3 548.6   899.3 548.4 16.3 559.2   Impinger Color Clew. 2.6 AB Labled? 558.9	Final	423.0	973.1	714,3	595.9								
Gain 259.6 / 215.1 / 71.3 24 548.4 16.3 554.2 Impinger Color Clew. 2.6 AB Labled? 558.9	Initial	44	758.01	643,0	593.3			548.6	8993				
Impinger Color Clew 2.6 AB Labled? 558.9 Silica Gel Condition Sealed? Sealed?	Gain		215,1	71,3,	134			348,4		559,2			
Silica Gel Condition Sealed? k3/	Im	pinger Color	clear.		2.6	AB 6130V	Labled?			558.90			
	Silica G	el Condition	used				Sealed?			13/			

Check COC for Sample IDs of Media Blanks



## Sample and Velocity Traverse Points - Method 1

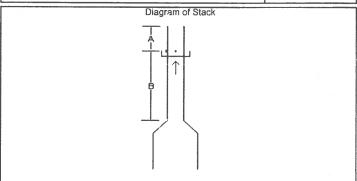
Client	New-Indy	95/W	Source	SDTV 2 & 3
Loaction/Plant	Catawba, SC	W.O. N	lumber	15730.001.001
Operator _	JWS/JW		Date	3/27/2019
Duct Type	☑ Circular	Rectangular		
Traverse Type	Particulate Traverse	✓ Velocity Traverse	Stratifi	c ition Traverse

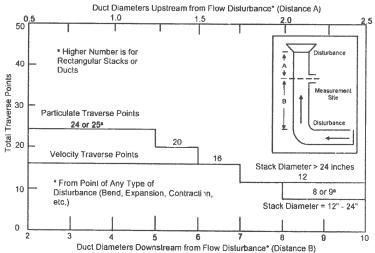
Depth, far wall to outside of port (in) = C	77.75
Port Depth (in) = D	6.75
Depth of Duct, diameter (in) = C - D	71
Area of Duct (ft <sup>3</sup> )	27.49
Number of Ports	2
Traverse Points per Port	8
Total Traverse Points	16

Rectangular Ducts Only	
Width of Duct (in)	
Equivalent Diameter (in)	

		Distance from	Distance from
Traverse		Inside Duct	Outside of
Point	% of Duct	Wall (in)	Port (in)
1	3.2	2.3	9.0
2	10.5	7.4	14.2
3	19.4	13.8	20.5
4	32.3	22.9	29.7
5	67.7	48.1	54.8
6	80.6	57.2	64.0
7	89.5	63.6	70.3
8	96.8	68.7	75.5

Flow Disturbances	
Upstream - A (ft)	10
Downstream - B (ft)	38
Upstream - A (duct diameters)	1.7
Downstream - B (duct diameters)	6.4





			Tı	rave	rse Po	int L	ocatio	n %	of Stac	:k - (	Circula	ır	
		1,500			Nu	mbe	r of Tra	avers	e Poin	ts			
		1	2	3	4	5	6	7	8	9	10	.11	12
Т	1		14.6		6.7		4.4		3.2		2.6		2.1
г	2		85.4	/hes	25.0		14.6	N. A.	10.5		8.2	114	6.7
a v i	3				75.0		29.6		19.4		14.6		11.8
6 0	4				93.3	is.	70.4	in at	32.3		22.6		17.7
r c	5						85.4		67,7		34.2		25.0
s a	6				lesso.		95.6		80.8		65.8		35.B
e t	7								89.5		77.4		64 4
P	8						853		98.8		85.4		75.0
o n	9										91.8		82 3
i	10					164	gran.		100	1	97.4	W.	88.2
n	11												93.3
Ľ.	12												97.9

			Tra	verse	Poin	t Loc	ation	% of	Stack	- Red	tang	ular	
					Ni	umbe	of Tr	avers	e Poir	nts			
		1	2	3	4	5	6	7	8	9	10	11	12
Г	1		25.0	16.7	12.5	10.0	8.3	7.1	3.3	5.6	5.0	4.5	4.2
-	2		75.0	50.0	37.5	30.0	25.0	21,4	18.8	18.7	15.0	13.6	12,5
1	3			93.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
/ L	4	13.8			87.5	70.0	58.3	50.0	43.8	38 9	35.0	31.8	29.2
. с	5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
а	6		10.3		111.5		91.7	78.6	68.8	61.1	55.0	50 0	45.8
t	7							92.9	81.3	72.2	65.0	59 1	54.2
0	8			18.7		EN W	Jane 1		938	83 3	75.0	68.2	62.5
n	9									94.4	85,0	77.3	70.8
	10			- 11			241	1	24		95.0	88 4	79.2
	11											95.5	87.5
	12		100					15.1	200				95.8

Rectangular											
Stack	Points										
& Matrix											
9 -	3 x 3										
12 -	4 x 3										
16 -	4 x 4										
20 -	5 x 4										
25 -	5 x 5										
30 -	6 x 5										
36 -	6 x 6										
42 -	7 x 6										
49 -	7 x 7										

Tape measure ID



#### **RUN SUMMARY**

Number 1

Client: New Indy

Location: Catawba, NC

Source: 2 & 3 SDTV

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 27 Jun 2021

Start Time 11:00

**End Time 12:10** 

Average Measured TRS Conc. Recovery No. 2 TRS Corrected for Recovery 6.76 ppm 91.9 % 7.36 ppm

AB 9129



#### **RUN SUMMARY**

Number 2

Client: New Indy

Location: Catawba, NC

Source: 2 & 3 SDTV

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 27 Jun 2021

Start Time 12:22

**End Time** 13:31

Average Measured TRS Conc. Recovery No. 2 TRS Corrected for Recovery 8.48 ppm 91.9 % 9.23 ppm



#### **RUN SUMMARY**

Number 3

Client: New Indy

Location: Catawba, NC

Source: 2 & 3 SDTV

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

Date: 27 Jun 2021

Start Time 13:44

**End Time 14:54** 

Average Measured TRS Conc. Recovery No. 2 TRS Corrected for Recovery

7.54 ppm 91.9 % 8.20 ppm

9129



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2	7
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Number 1

				17.38931																					
		TRS	mdd	7.74	8.00	7.65	7.07	6.35	6.14	5.59	2.67	5.68	5.43		5.48	6.30	6.40	6.89	7.29	7.63	7.78	7.93	7.96	7.41	6.82
800.1	121		v																						
	VD 27 Jun 2021	DMDS	ppm	0.04	90.0	0.05	90.0	90.0	90.0	90.0	0.04	90.0	0.05		0.05	0.05	0.07	90.0	90.0	90.0	90.0	90.0	0.07	90.0	
Project Number:	Operator: Date:		area	က	2	က	2	2	2	2	က	2	က		4	4	9	2	9	5	9	9	7	9	
Project N	0		V	0.078	0.078	0.078	0.078	0.078			0.078	0.078			0.078	0.078		0.078	0.078	0.078	0.078	0.078	0.078	0.078	
		DMS	ppm						0.09	0.08			0.09				0.16								
	- -		area	<2	7	<b>%</b>	<b>%</b>	7	က	7	7	<b>%</b>	က	Shange	7	<b>~</b>	7	<b>%</b>	<b>~</b>	<b>~</b>	<2	<b>~</b>	<b>~</b>	<2	
	Method: 16 Calibration: 1		V											for Port (											
•	O M	MeSH	mdd	0.83	0.95	0.97	1.01	1.01	1.02	96.0	0.99	0.99	0.94 3	Paused	0.97	1.01	1.04	1.12	1.19	1.21	1.23	1.25	1.24	1.23	
			area	7	101	107	115	115	117	105	110	111	66		107	113	122	138	155	162	166	173	169	165	
			v																						
À	a, NC OTV	H <sub>2</sub> S	mdd	6.75	6.85	6.51	5.87	5.14	4.91	4.43	4.51	4.50	4.31		4.32	5.10	2.07	5.57	5.90	6.23	6.35	6.47	6.50	5.98	5.56
New Indy	Catawba, NC 2 & 3 SDTV		area	9746	10033	9112	7501	5842	5372	4418	4580	4551	4210		4222	2168	5698	6812	7585	8396	8694	9023	2006	7770	
Client:	Location: Source:		Time	11:00	11:03	11:06	11:09	11:12	11:15	11:18	11:21	11:24	11:27		11:40	11:43	11:46	11:49	11:52	11:55	11:58	12:01	12:04	12:07	Averages

Number 2

					18.26409																					
			TRS	ppm	6.21	7.24	7.73	8.99	9.79	9.66	8.69	8.39	9.63	9.82		11.09	10.47	9.75	8.34	8.28	8.01	7.27	6.83	6.91	6.68	8.49
1.008	Š	1.7/		<b>v</b>																						
15730.001.008	VD	7/ Jun 2021	DMDS	mdd	90.0	90.0	0.05	90.0	0.07	0.07	0.07	0.05	0.07	0.07		0.07	90.0	90.0	0.05	0.07	0.05	90.0	0.04	90.0	90.0	
Project Number:		Dale.		area	2	2	က	2	7	7	9	4	7	7		7	9	9	4	7	4	2	7	2	2	
Project !	0			v																	0.078				0.078	
			DMS	ppm	60.0	0.09	0.10	0.11	0.12	0.10	0.11	0.10	0.12	0.12		0.10	0.12	0.10	0.11	0.10		0.12	0.11	0.10		
	" <sup>7</sup>	. 1 1		area	2	က	က	4	2	က	4	က	4	4	Shange	က	4	က	4	က	\$	4	4	က	<b>~</b>	
	Method: 16	Calibration.		<b>v</b>											used for Port Change										:	
	≥ (	S S	MeSH	ppm	1.17	1.22	1.33	1.32	1.40	1.37	1.35	1.32	1.38	1.42	Paused	1.28	1.25	1.32	1.18	1.23	1.24	1.20	1.17	1.17	1.16	
				area	2	164	193	192	213	206	199	192	207	220		181	173	190	155	167	170	158	152	153	149	
				V																						
>	, NC	<u> </u>	H <sub>2</sub> S	ppm	4.84	5.82	6.21	7.44	8.13	8.04	7.10	98.9	7.99	8.14		9.57	8.97	8.20	6.94	6.81	6.58	5.84	5.47	5.51	5.32	6.99
New Indy	Catawba, NC	2 & 3 3DIV		area	5222	7380	8350	11724	13839	13568	10733	10057	13409	13864		18795	16648	14072	10289	9917	9314	7425	6575	9299	6242	
Client:	Location:	Source.		Time	12:22	12:25	12:28	12:31	12:34	12:37	12:40	12:43	12:46	12:49		13:01	13:04	13:07	13:10	13:13	13:16	13:19	13:22	13:25	13:28	Averages

Number 3

		TRS	mdd	6.91	7.05	7.59	8.00	8.70	8.30	7.82	8.64	8.06	7.96		5.43	6.35	6.84	7.21	7.45	8.09	7.75	7.60	7.54	8.13	7.57
800.	5		V																						
15730.001.008	VD 27 Jun 2021	DMDS	mdd	90.0	90.0	90.0	90.0	0.05	90.0	90.0	90.0	90.0	0.05		0.04	90.0	0.05	90.0	0.05	90.0	90.0	90.0	90.0	0.07	
umber:	Operator:	200	area	5	2	2	2	4	9	2	9	4	4		7	2	4	2	4	2	IJ	4	9	7	
Project Number:	ŏ		V		0.078	0.078		0.078					0.078		0.078	0.078		0.078		0.078				0.078	
		DMS	mdd	0.09			0.10		60.0	0.09	0.08	0.10					0.10		0.10		0.09	0.13	0.08		
	9		area	က	<b>~</b>	<2	က	<2	က	က	2	က	7	Change	<b>%</b>	<b>~</b>	က	7	က	<b>%</b>	2	2	2	<2	
	Method: 16		٧											Paused for Port Change											
	≥ ".	MeSH	mdd	1.14	1.16	1.21	1.19	1.18	0.84	0.86	0.80	0.82	0.80	<b>Paused</b>	0.67	99.0	69.0	0.99	0.72	1.10	1.03	1.01	1.05	0.77	
			area	9	149	161	157	154	81	84	74	77	72		52	51	99	111	09	134	118	114	124	68	
			٧																						
>	a, NC	H <sub>2</sub> S	ppm	5.56	5.69	6.19	09.9	7.34	7.24	6.75	7.63	7.03	6.99		4.60	5.49	5.94	6.02	6.53	6.80	6.52	6.34	6.28	7.13	6.43
New Indy	Catawba, NC 2 & 3 SDTV		area	6773	7079	8284	9347	11430	11137	9753	12285	10527	10419		4752	6627	7671	7875	9158	9894	9132	8684	8526	10818	
Client:	Location: Source:		Time	13:44	13:47	13:50	13:53	13:56	13:59	14:02	14:05	14:08	14:11		14:24	14:27	14:30	14:33	14:36	14:39	14:42	14:45	14:48	14:51	Averages

Number 1

Client: New Indy

Location: Catawba, NC Source: 2 & 3 SDTV

Method 16 Calibration 1 Project Number: 15730.001.008
Operator: VD

<b>T</b> :	H	₂S	Me	SH	D	MS	DM	IDS	TRS
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
11:00	9746	6.75	79	0.83	<2	<0.078	3	0.04	7.67
11:03	10033	6.85	101	0.95	<2	< 0.078	5	0.06	7.92
11:06	9112	6.51	107	0.97	<2	< 0.078	3	0.05	7.58
11:09	7501	5.87	115	1.01	<2	< 0.078	5	0.06	6.99
11:12	5842	5.14	115	1.01	<2	< 0.078	5	0.06	6.27
11:15	5372	4.91	117	1.02	3	0.09	5	0.06	6.14
11:18	4418	4.43	105	0.96	2	0.08	5	0.06	5.59
11:21	4580	4.51	110	0.99	<2	< 0.078	3	0.04	5.59
11:24	4551	4.50	111	0.99	<2	< 0.078	5	0.06	5.61
11:27	4210	4.31	99	0.94	3	0.09	3	0.05	5.43
				sed for P	ort Chai				
11:40	4222	4.32	107	0.97	<2	<0.078	4	0.05	5.40
11:43	5768	5.10	113	1.01	<2	< 0.078	4	0.05	6.22
11:46	5698	5.07	122	1.04	7	0.16	6	0.07	6.40
11:49	6812	5.57	138	1.12	<2	< 0.078	5	0.06	6.81
11:52	7585	5.90	155	1.19	<2	< 0.078	6	0.06	7.21
11:55	8396	6.23	162	1.21	<2	< 0.078	5	0.06	7.56
11:58	8694	6.35	166	1.23	<2	< 0.078	6	0.06	7.70
12:01	9023	6.47	173	1.25	<2	< 0.078	6	0.06	7.86
12:04	9097	6.50	169	1.24	<2	< 0.078	7	0.07	7.89
12:07	7770	5.98	165	1.23	<2	<0.078	6	0.06	7.33
Average		5.56		1.06		<0.078		0.06	6.76





Number 2

Client: New Indy

Source: 2 & 3 SDTV

Location: Catawba, NC

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

Time	H <sub>2</sub>	H <sub>2</sub> S		SH	D	MS	DM	IDS	TRS
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
12:22	5222	4.84	150	1.17	2	0.09	5	0.06	6.21
12:25	7380	5.82	164	1.22	3	0.09	5	0.06	7.24
12:28	8350	6.21	193	1.33	3	0.10	3	0.05	7.73
12:31	11724	7.44	192	1.32	4	0.11	5	0.06	8.99
12:34	13839	8.13	213	1.40	5	0.12	7	0.07	9.79
12:37	13568	8.04	206	1.37	3	0.10	7	0.07	9.66
12:40	10733	7.10	199	1.35	4	0.11	6	0.07	8.69
12:43	10057	6.86	192	1.32	3	0.10	4	0.05	8.39
12:46	13409	7.99	207	1.38	4	0.12	7	0.07	9.63
12:49	13864	8.14	220	1.42	4	0.12	7	0.07	9.82
				sed for F	ort Chai				
13:01	18795	9.57	181	1.28	3	0.10	7	0.07	11.1
13:04	16648	8.97	173	1.25	4	0.12	6	0.06	10.5
13:07	14072	8.20	190	1.32	3	0.10	6	0.06	9.75
13:10	10289	6.94	155	1.18	4	0.11	4	0.05	8.34
13:13	9917	6.81	167	1.23	3	0.10	7	0.07	8.28
13:16	9314	6.58	170	1.24	<2	< 0.078	4	0.05	7.93
13:19	7425	5.84	158	1.20	4	0.12	5	0.06	7.27
13:22	6575	5.47	152	1.17	4	0.11	2	0.04	6.83
13:25	6676	5.51	153	1.17	3	0.10	5	0.06	6.91
13:28	6242	5.32	149	1.16	<2	<0.078	5	0.06	6.60
Average		6.99		1.28		0.10		0.06	8.48





Number 3

Client: New Indy

Location: Catawba, NC Source: 2 & 3 SDTV

Method 16 Calibration 1 Project Number: **15730.001.008**Operator: **VD** 

Time	H <sub>2</sub> area		Me area	SH ppm	D area	MS ppm	DM area	DS ppm	TRS ppm
		ppm	area	————	arca	————	arca	ppin	ppiii
13:44	6773	5.56	145	1.14	3	0.09	5	0.06	6.91
13:47	7079	5.69	149	1.16	<2	< 0.078	5	0.06	6.97
13:50	8284	6.19	161	1.21	<2	<0.078	5	0.06	7.52
13:53	9347	6.60	157	1.19	3	0.10	5	0.06	8.00
13:56	11430	7.34	154	1.18	<2	< 0.078	4	0.05	8.62
13:59	11137	7.24	81	0.84	3	0.09	6	0.06	8.30
14:02	9753	6.75	84	0.86	3	0.09	5	0.06	7.82
14:05	12285	7.63	74	0.80	2	0.08	6	0.06	8.64
14:08	10527	7.03	77	0.82	3	0.10	4	0.06	8.06
14:11	10419	6.99	72	0.80	<2	< 0.078	4	0.05	7.89
				sed for P		nge			
14:24	4752	4.60	52	0.67	<2	< 0.078	2	0.04	5.35
14:27	6627	5.49	51	0.66	<2	< 0.078	5	0.06	6.27
14:30	7671	5.94	56	0.69	3	0.10	4	0.05	6.84
14:33	7875	6.02	111	0.99	<2	< 0.078	5	0.06	7.13
14:36	9158	6.53	60	0.72	3	0.10	4	0.05	7.45
14:39	9894	6.80	134	1.10	<2	< 0.078	5	0.06	8.01
14:42	9132	6.52	118	1.03	2	0.09	5	0.06	7.75
14:45	8684	6.34	114	1.01	5	0.13	4	0.06	7.60
14:48	8526	6.28	124	1.05	2	0.08	6	0.06	7.54
14:51	10818	7.13	68	0.77	<2	<0.078	7	0.07	8.05
Average		6.43		0.94		<0.078		0.06	7.54





Number 0

Client: New Indy

Location: Catawba, NC Source: 2 & 3 SDTV

Method 16 Calibration 1 Project Number: 15730.001.008
Operator: VD

Time	H <sub>2</sub>	S	Me	SH	D	MS	DN	MDS	TRS
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
			C	C416806 7	7.257 pp	om 🗸			·
16:31	12652	7.69	<2	< 0.12	<2	<0.078	<2	< 0.036	7.69
16:34	13142	7.85	<2	< 0.12	<2	< 0.078	<2	< 0.036	7.85
16:37	13429	7.94	<2	<0.12	<2	<0.078	<2	<0.036	7.94
Average		7.83		<0.12		<0.078		<0.036	7.83



#### RECOVERY DATA

Number 1

Client: New Indy

Location: Catawba, NC Source: 2 & 3 SDTV

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

Date: 27 Jun 2021

Before Run 1

Start Time 09:25 **End Time** 09:39

Recovery Gas to Probe, Time 09:25

Peak Areas, mv-sec

11108 11283 11482

Average

ppm

11291

7.30

Recovery Gas to GC, Time 09:37

Peak Areas, mv-sec

13285

13216

13267

Average

ppm

13256 / 7.95

Recovery 91.8%

#### **RECOVERY DATA**

Number 2

Client: New Indy

Location: Catawba, NC Source: 2 & 3 SDTV

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 27 Jun 2021

After Run 3 Before Run 4
Start Time 14:56 End Time 15:17

Recovery Gas to Probe, Time 14:56

Peak Areas, mv-sec

11388

11667 11619

**Average** ppm 11558 7.39

Recovery Gas to GC, Time 15:13

 Peak Areas, mv-sec
 Average
 ppm

 13585
 13587
 13493
 13555 / 8.04

Recovery 91.9% /

N

#### **CALIBRATION DATA**

Number 1

Client: New Indy

Project Number: 15730.001.008

Operator: **VD** 

Location: Catawba, NC Source: 2 & 3 SDTV

Method 16

Ambient	Temperature: 72°C	Barometric P	Pressure: 29.70 in.	Hg
Analyte	H <sub>2</sub> S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	346	363	470	238
Ret. Time, sec	16.0	22.5	48.0	127.0
1 Flow = 37.1 mL/Min	<b>9.32</b> ppm	<b>9.79</b> ppm	<b>12.7</b> ppm	<b>6.41</b> ppm
Time: 07:00		Peak Area	s, mv-sec	
	17531	8727	27825	33485
	17951	8703	27443	33712
	18066	8758	27669	33342
Average Area	17849	8730	27646 /	33513 /
2 Flow = 78.5 mL/Min	<b>4.41</b> ppm	<b>4.63</b> ppm	<b>5.99</b> ppm	<b>3.03</b> ppm
Time: 08:24		Peak Area	s, mv-sec	
	4366	2153	6888	8191
	4464	2149	6729	8050
	4361	2131	6827	8110
Average Area	4397 /	2145 /	6815 /	8117
3 Flow = 172 mL/Min	<b>2.01</b> ppm	<b>2.11</b> ppm	<b>2.73</b> ppm	<b>1.38</b> ppm
Time: 08:47		Peak Area	s, mv-sec	
	1026	464	1561	1864
	980	466	1558	1873
	996	463	1569	1872
Average Area	1001 /	464	1563	1870





#### **CALIBRATION SUMMARY**

Number 1

Client: New Indy

Location: Catawba, NC Source: 2 & 3 SDTV

Project Number: 15730.001.008

Operator: **VD** 

Method 16 Date: 26 Jun 2021

H₂S	1	2	3		
Time	07:00	08:24	08:47		
Concentration, ppm	9.32	4.41	2.01		
Area, mv-sec	17849 .	4397 -	1001		
Calc. Conc., ppm	9.31	4.42	2.01		
% Error	-0.1	0.2	-0.1		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8784	2.4316	>0.9999	2	0.073
MeSH	1	2	3		
Time	07:00	08:24	08:47		
Concentration, ppm	9.79	4.63	2.11		
Area, mv-sec	8730	2145	464		
Calc. Conc., ppm	9.74	4.68	2.10		
% Error	-0.5	1.0	-0.5		
<b>Calibration Curve</b>	Slope	Intercept		Min. Area	Det. Lim.
	1.9131	2.0496	0.9999	2	0.12
DMS	1	2	3		
Time	07:00	08:24	08:47		
Concentration, ppm	12.7	5.99	2.73		
Area, mv-sec	27646	6815	1563		
Calc. Conc., ppm	12.7	6.00	2.73		
% Error	-0.1	0.1	-0.1		
<b>Calibration Curve</b>	Slope	Intercept		Min. Area	Det. Lim.
	1.8729	2.3765	>0.9999	2	0.078
DMDS	1	2	3		
Time	07:00	08:24	08:47		
Concentration, ppm	6.41	3.03	1.38		
Area, mv-sec	33513	8117 <sup>′</sup>	1870		
Calc. Conc., ppm	6.42	3.02	1.38		
% Error	0.1	-0.3	0.1		
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8815	3.0064	>0.9999	2	0.036





#### **CALIBRATION DATA**

Number 2

Client: New Indy

Location: Catawba, NC Source: 2 & 3 SDTV

Method 16

Project Number: 15730.001.008

Operator: **VD** 

Ambient	Temperature: 72°C	Barometric I	Pressure: 29.45 in. Hg	
Analyte	H <sub>2</sub> S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	349	366	474	240
Ret. Time, sec	16.0	22.5	48.0	127.0
1 Flow = 35.7 mL/Min	<b>9.77</b> ppm	<b>10.3</b> ppm	<b>13.3</b> ppm	<b>6.71</b> ppm
Time: 15:25		Peak Area	as, mv-sec	
	19473	9508	30148	36336
	19160	9600	30169	36878
	19488	9629	30467	36382
Average Area	19374	9579	30261 /	36532 /
2 Flow = <b>76.0</b> mL/Min	<b>4.59</b> ppm	<b>4.82</b> ppm	<b>6.24</b> ppm	<b>3.15</b> ppm
Time: 15:41		Peak Area	as, mv-sec	
	4986	2412	7781	9320
	5080	2405	7724	9106
	5033	2355	7680	9257
Average Area	5033 /	2391 /	7728	9228 /
3 Flow = 170 mL/Min	<b>2.06</b> ppm	<b>2.16</b> ppm	<b>2.80</b> ppm	<b>1.41</b> ppm
Time: 16:10		Peak Are	as, mv-sec	
	1092	517	1666	1995
	1079	522	1692	1998
	1108	504	1661	1964
Average Area	1093	514 /	1673	1986



#### **CALIBRATION SUMMARY**

Number 2

Client: New Indy

Location: Catawba, NC Source: 2 & 3 SDTV

Project Number: 15730.001.008

Operator: **VD** 

Method 16 Date: 27 Jun 2021

H <sub>2</sub> S	1	2	3		
Time	15:25	15:41	16:10		
Concentration, ppm	9.77	4.59	2.06		
Area, mv-sec	19374°.	5033	1093		
Calc. Conc., ppm	9.68	4.67	2.04		
% Error	-0.9	1.7	-0.8		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8461	2.4668	0.9998	2	0.067
MeSH	1	2	3		
Time	15:25	15:41	16:10		
Concentration, ppm	10.3	4.82	2.16		
Area, mv-sec	9579	2391 ′	514 ´		
Calc. Conc., ppm	10.2	4.87	2.15		
% Error	-0.6	1.1	-0.5		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8776	2.0870	0.9999	2	0.11
DMS	11	2	3		
Time	15:25	15:41	16:10		
Concentration, ppm	13.3 -	6.24	2.80		
Area, mv-sec	30261 ′	7728	1673		
Calc. Conc., ppm	13.2	6.33	2.78		
% Error	-0.7	1.4	-0.7		
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8592	2.3984	0.9999	2	0.074
DMDS	1	2	3		
Time	15:25	15:41	16:10		
Concentration, ppm	6.71	3.15	1.41		
Area, mv-sec	36532	9228 ′	1986		
Calc. Conc., ppm	6.67	3.20	1.41		
% Error	-0.7	1.3	-0.6		
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8700	3.0217	0.9999	2	0.035
				1	
				)	
				1	

#### **ANALYTES AND STANDARDS**

Client: New Indy

Location: Catawba, NC

Source: 2 & 3 SDTV

Project Number: 15730.001.008

Operator: **VD** 

Date: 26 Jun 2021

M	et	hod	16	ì
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Analyte Molecular Weight	<b>H₂S</b> 34.08	<b>MeSH</b> 48.11	<b>DMS</b> 62.14	<b>DMDS</b> 94.20	
Retention Time, sec	16.0	22.5	48.0	127.0	
Peak Detection Window, sec	3.0	7.0	10.0	10.0	
Minimum Peak Area, mv-sec	2	2	2	2	
Minimum Peak Height, mv	1	1	1	1	
Beginning Peak Width, sec	1.0	1.0	2.0	3.0	
Ending Peak Width, sec	2.0	6.0	4.0	5.0	
Permeation Device ID	T-51828	33-53274	89-53332	89-53266	/
Permeation Rate, ng/min	483	716	1197	918	
Permeation Rate, nL/min*	349	366	474	240	

Barometric Pressure: 29.45 in. Hg Ambient Temperature: 72 °F

No Oxygen Correction

\*Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min. Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

 $PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^{\circ} + T_a) / T_s] \times (P_s / P_b)$ 

Where:

PR<sub>nl</sub> = Permeation Rate by volume, nL/min PR<sub>ng</sub> = Permeation Rate by weight, ng/min

V<sub>mol</sub> = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

 $\mathbf{W}_{mol}$  = Molecular Weight of compound

T<sub>a</sub> = Ambient Temperature, °F

T<sub>s</sub> = Standard Temperature = 492°R (32 °F)

P<sub>s</sub> = Standard Pressure = 29.92 in Hg

P<sub>b</sub> = Barometric Pressure, in Hg

For example, H<sub>2</sub>S:

PR<sub>ni</sub> = 483 x (22.4 / 34.08) x [(460 + 72) / 492] x (29.92 / 29.45) = 349 nL/min

To calclate concentrations:

 $C = PR_{nl} / F_{d}$ 

Where:

**C** = Concentration, ppmv

PR<sub>nl</sub> = Permeation Rate by volume, nL/min

**F**<sub>d</sub> = Flow rate of diluent, mL/min



#### INSTRUMENT INFORMATION

Pulp Dryer, #3 Paper Machine, #2-3 SDTVs, & #1-2 CBs

Client: New Indy

Location: Catawba, NC

Source: 2 & 3 SDTV

Method 16

Project Number: 15730.001.008

Operator: **VD** 

Date: 26 Jun 2021

File: C:\Data\210627 New Indy Catawba SDTV.trs

Program Version: 2.0, built 15 May 2017 File Version: 2.0

Computer: WLT5 Trailer: 281

Analog Input Device: MCC USB-1608G GC Channel: 16

Sampling Rate: 0.050 sec. Data Interval: 0.5 sec.

Gas Chromatograph: Shimadzu GC8-A Serial No. C10493615061

**Detector Range: 10** 

	Gases		Temperatures, °C	Columns		
	Press. psi	Flow mL/min	Column: 140	Primary: Carbopack		
$H_2$	30	50	Detector: 140	Secondary: N/A		
Air	30	60		Sample Loop: 4"		
Carrier	50	30				

#### **Injection Cycle**

Total Length: 180 sec Sampling Time: 170 sec Load/Backflush Time: 80 sec

#### **Default Integration Parameters**

Signal Threshold 0.67 mv Peak detection window ±10 sec Minimum peak area 2 mv-sec Minimum peak height 1 mv above baseline

#### **Dynacalibrator**

Chamber Temperature 50.0°C Ambient Temperature 72.0°F Barometric Pressure 29.45 in. Hg

Number 1

Client: New Indy Location: Catawba, SC

Source: 2 &3 SDTV

Project Number: **15730.001.008**Operator: **VD** 

		_
Cal	ibrati	on 1
Call	11.71 (21.11	

Time	0	2	C	02
Time	mv	%	mv	%
12:12:06	6857	20.1	-5	0.0
12:12:16	6859	20.1	-5	0.0
12:12:26	6858	20.1	-7	0.0
12:12:36	6858	20.1	-8	0.0
12:12:46	6858	20.1	-8	0.0
12:12:56	6859	20.1	-8	0.0
12:13:06	6859	20.1	-6	0.0
12:13:16	6858	20.1	-5	0.0
12:13:26	6859	20.1	-5	0.0
12:13:36	6859	20.1	-5	0.0
12:13:46	6858	20.1	-6	0.0
12:13:56	6856	20.1	-7	0.0
Avgs	6858	20.1	-6	0.0

Number 2

Client: New Indy

Project Number: **15730.001.008**Operator: **VD** 

Calibration 1 Date: 27 Jun 2021

Location: Catawba, SC Source: 2 &3 SDTV

Time	O <sub>2</sub>		CO <sub>2</sub>	
Time	mv	%	mv	%
13:35:44	6803	20.0	-5	0.0
13:35:54	6804	20.0	-5	0.0
13:36:04	6804	20.0	-6	0.0
13:36:14	6802	20.0	-8	0.0
13:36:24	6803	20.0	-8	0.0
13:36:34	6804	20.0	-8	0.0
13:36:44	6803	20.0	-6	0.0
13:36:54	6805	20.0	-5	0.0
13:37:04	6802	20.0	-5	0.0
13:37:14	6803	20.0	-5	0.0
13:37:24	6807	20.0	-5	0.0
13:37:34	6946	20.4	-8	0.0
Avgs	6816	20.0	-6	0.0

Number 3

Client: New Indy
Location: Catawba, SC
Source: 2 &3 SDTV

Project Number: 15730.001.008

Operator: **VD** 

Date: 27 Jun 2021

Calibration 1

т	<b>T</b> :		O <sub>2</sub>		CO <sub>2</sub>	
11	Time	mv	%	mv	%	
14:	57:38	6920	20.3	-8	0.0	
14:	57:48	6922	20.3	-6	0.0	
14:	57:58	6921	20.3	-5	0.0	
14:	58:08	6920	20.3	-6	0.0	
14:	58:18	6920	20.3	-5	0.0	
14:	58:28	6919	20.3	-7	0.0	
14:	58:38	6918	20.3	-8	0.0	
14:	58:48	6920	20.3	-8	0.0	
14:	58:58	6920	20.3	-8	0.0	
14:	59:08	6918	20.3	-6	0.0	
14:	59:18	6918	20.3	-5	0.0	
14:	59:28	6920	20.3	-5	0.0	
A	vgs	6920	20.3	-6	0.0	

#### **CALIBRATION DATA**

Number 1

Client: New Indy
Location: Catawba, SC
Source: 2 &3 SDTV

Project Number: 15730.001.008

Operator: **VD** 

Date: 27 Jun 2021

Start Time: 10:20

 $O_2$ 

Method: EPA 3A

Calibration Type: Linear Regression

% Zero 10.1 / 20.2 /	Calibration Results Cylinder ID  - XC013544B CC275468	Result, mv -2 3438 6897	
<b>Slope</b> 340.9	Curve Coefficients Intercept -7	Corr. Coeff. >0.9999	/

CO<sub>2</sub>
Method: EPA 3A
Calibration Type: Linear Regression

	Calibration Results		
%	Cylinder ID	Result, mv	
Zero / /	-	-8	
10.2 / /	XC013544B	4174	
20.3	CC275468	8060	
	Curve Coefficients		1
Slope	Intercept	Corr. Coeff.	
398.0	38	0.9998	





#### **CALIBRATION ERROR DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: 2 &3 SDTV

Project Number: 15730.001.008

Operator: **VD** 

Date: 27 Jun 2021

Calibration 1

Start Time: 10:20

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

**Slope** 340.9

Intercept -7.4

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	-2	0.0	0.0	0.0 🗸	Pass
10.1	3438	10.1	0.0	0.0	Pass
20.2	6897	20.3	0.1	0.5	Pass

CO<sub>2</sub>

Method: EPA 3A Span Conc. 20.3 %

**Slope** 398.0

Intercept 37.9

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	-8	-0.1	-0.1	-0.5 🗸	Pass
10.2	4174	10.4	0.2	1.0	Pass
20.3	8060	20.2	-0.1	-0.5	Pass



#### **CALIBRATION ERROR DATA**

Number 2

Client: New Indy

Location: Catawba, SC

Source: 2 &3 SDTV

Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: **27 Jun 2021** 

Start Time: 15:13

 $O_2$ 

Method: EPA 3A

Span Conc. 20.2 %

**Slope** 340.9

Intercept -7.4

Standard %	Response mv	Result	Difference %	Error %	Status
Zero	-2	0.0	0.0	0.0 🗸	Pass
10.1	3438	10.1	0.0	0.0	Pass
20.2	6897	20.3	0.1	0.5	Pass

CO<sub>2</sub>

Method: EPA 3A

Span Conc. 20.3 %

**Slope** 398.0

Intercept 37.9

Standard	Response	Result	Difference	Error	
%	mv	%	%	%	Status
Zero	-8	-0.1	-0.1	-0.5	Pass
10.2	4174	10.4	0.2	1.0	Pass
20.3	8060	20.2	-0.1	-0.5 /	Pass



#### **METHODS AND ANALYZERS**

Client: New Indy

Location: Catawba, SC

Source: 2 &3 SDTV

Project Number: 15730.001.008

Operator: **VD** 

Date: 27 Jun 2021

File: C:\Data\210627 New Indy Catawba SDTV.cem

Program Version: 2.2, built 3 Jul 2020 File Version: 2.04 Computer: WSAUBCHEMLABGC1 Trailer: 281

Analog Input Device: Keithley KUSB-3108

#### **Channel 1**

Analyte O<sub>2</sub>

Method **EPA 3A**, Using Bias

Analyzer Make, Model & Serial No. Teledyne T802 s/n: 172

Full-Scale Output, mv 10000
Analyzer Range, % 25.0
Span Concentration, % 20.2

#### Channel 2

Analyte CO<sub>2</sub>

Method **EPA 3A**, Using Bias

Analyzer Make, Model & Serial No. **Teledyne T802 s/n: 172** 

Full-Scale Output, mv 10000
Analyzer Range, % 25.0
Span Concentration, % 20.3



### APPENDIX F FIELD DATA – No. 1 AND 2 COMBINATION BOILERS





### No. 1 COMBINATION BOILER (CONDITION 1: NCG AND SOG GASES)

New Indy Catawba, SC 15730.001.008 No. 1 Combination Boiler Condition 1: NCGs & SOGs

#### **EMISSION CALCULATIONS**

Date Time Began Time Ended	Run 1
Volumetric Flow Rate, (Qs), DSCFM BWS % Oxygen Recovery, %	1.35E+05       1.31E+05       1.33E+05       1.33E+05         0.174       0.177       0.160       0.170         12.1       11.4       12.0       11.8         86.2       86.2       86.2       86.2
Sulfur Dioxide MW= 64.06  Concentration, ppm Emission Rate, lb/hr	195.0 278.0 344.0 272.3 262.7 362.5 457.4 360.9
Total Reduced Sulfur (TRS MW)= 34.08  Concentration, ppm Emission Rate, lb/hr	1.09 1.07 1.03 1.06 0.78 0.74 0.73 0.75
H2S (H2S MW)= 34.08  Concentration, ppm  Concentration, ppm (Corrected for Recovery)  Emission Rate, lb/hr	0.08     0.07     0.10     0.08       0.09     0.08     0.12     0.10       0.07     0.06     0.08     0.07

M

New Indy Catawba, SC

15730.001.008 No. 1 Combination Boiler

#### **Condition 1: NCGs & SOGs**

ISOKI	NETIC	CAL	CIII	ATIONS	

	ISOKINETIC CALC	ULATIONS			
Run Number		1	2	3	Mean
Date		6/23/21	6/23/21	6/23/21	
Time Began		1158	1400 ✓	1541	
Time Ended		1326	1525 🗸	1710	
	INPUT DAT	ΓA			
Sampling Time, min	(Theta)	64.0	64	64	64
Stack Diameter, in.	(Dia.)	120.00 🗸	120.00 🗸	120.00	120.00
Barometric Pressure, in. Hg	(Pb)	29.45 🗸	29.45	29.45	29.45
Static Pressure, in. H2O	(Pg)	-0.64 🗸	-0.66	-0.65	-0.65
Pitot Tube Coefficient	(Cp)	0.84 🗸	0.84	0.84 🖊	0.84
Meter Correction Factor	(Y)	0.9880 🗸	0.9880 🗸	0.9880 🖊	0.9880
Orifice Calibration Value	(Delta H@)	1.7320 🗸	1.7320 🗸	1.7320	1.7320
Nozzle Diameter, in.	(Dn)	0.250 🗸	0.250 🗸	0.250	0.250
Meter Volume, ft^3	(Vm)	41.974 🗸	42.371	42.570	42.305
Meter Temperature, °F	(Tm)	88.0 🗸	92.5	97.3 ×	92.6
Meter Temperature, °R	(Tm-R)	548.0	552.5	557.3	552.6
Meter Orifice Pressure, in. H2O	(Delta H)	1.300 🗸	1.300 🗸	1.300 🗸	1.300
Ave Sq Rt Orifice Press, (in. H2O)^1/2	((Delta H)½)avg)	1.140	1.140	1.140	1.140
Volume H2O Collected, mL	(Vlc)	176.5 🗸	179.9 🗸	159.3	171.9
CO2 Concentration, %	(CO2)	7.8	8.4 🗸	7.7	8.0
O2 Concentration, %	(O2)	12.1	11.4	12.0	11.8
Ave Sq Rt Velo Head, (in. H2O) <sup>^1</sup> / <sub>2</sub>	((Delta P)½)avg)	0.786	0.765	0.765	0.772
Stack Temperature, °F	(Ts)	414.6	418.3 🗸	415.3	416.1
Stack Temperature, °R	(Ts-R)	874.6	878.3	875.3	876.1
	CALCULATED	DATA			
Nozzle Area, ft <sup>2</sup>	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft <sup>2</sup>	(As)	78.54	78.54	78.54	78.54
Stack Pressure, in. Hg	(Ps)	29.40	29.40	29.40	29.40
Meter Pressure, in. Hg	(Pm)	29.55	29.55	29.55	29.55
Standard Meter Volume, ft <sup>3</sup>	(Vmstd)	39.441	39.490	39.333	39.421
Standard Water Volume, ft <sup>3</sup>	(Vwstd)	8.308	8.468	7.498	8.091
Moisture Fraction (Measured)	(BWS)	0.174	0.177	0.160	0.170
Moisture Fraction (lower sat/meas)	(BWS)	0.174	0.177	0.160	0.170
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	29.73	29.80	29.71	29.75
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	27.69	27.72	27.84	27.75
Average Stack Gas Velocity, ft/sec	(Vs)	58.52	57.06	56.84	57.47
Stack Gas Flow, actual, ft <sup>3</sup> /min					
Stack Gas Flow, actual, it /illili	(Qa)	275752	268902	267850	270835
Stack Gas Flow, Stu , IT /min	(Qs)	135073	130750	133309	133044
Calibration check	(Yqa)	1.0034	0.9969	0.9980	0.999
Percent difference from Y	(1 ya)	1.0054	0.7707	0.7700	
1 Growth difference from 1					1.16%



Page 1 of 1	ak Checks Initial Final  OIZ . 205  16 6	n 1 NC6+ 506	SAMPLE TRAIN VACUUM	(in Hg)	-		1.5	1.5	1.5	1.5	1.5	5'1	5	5	1.7	7,7	1,5	S.	2	1.5/	Max Vac Vm-std,	Q <sub>s</sub> , dscfm % Isokinetic	Calculated by Calculated by Action 1	9	01.008 chine, 2 CBs Report
Pag	K Factor Leak Volume, ft³ @ Vac., in. Hg Pitot	Filter ID NA	IMPINGER EXIT TEMP (°F)		67	65	68	64	65	65	59	59	39	59	58	20	63	19	56	185	Max Temp	Thermocouple Check Meter Temp., °F	Ref. Temp, °F	Incert	
	7 °F 457n. Hg 5 ml. H <sub>2</sub> O 5 g 7 6, S 4 ft <sup>2</sup>	Filte Sam	FILTER FILTER BOX EXIT TEMP (9E) TEMP (9E)		244 1	245	249	248	250	250	250	251	252	251	250	251	232	253	252	252 /	Min/Max Min/Max 244/255				
	Ambient Temp. 80 Baro. Pressure* 244 Static Pressure - 64 Impinger Gain 160.5 Silica Gel Gain 16	Total Traverse Points	DGM PROBE OUTET TEMP (°F)		ड्रेस 234	88 235	88 236	89 237	88 237	88 238		88 240	1/2 241	117 28	88 242	88 241	84 240	84 DUZ 42	88 JUSTAIL	87 2401	8 6 234/243	O <sub>2</sub> /CO <sub>2</sub> by Orsat Fyrite M3A Leak Check, Pre-run	Post-run		
EPA 4, Moisture	Ambi 82 Baro. 32 Static 5 Impi Silice 0.84		DGM INLET		8	7	9	9	15	9	5	5	2	3	12	64	3	5	9	, ,	T BAY WE				
Method: EPA 4,	PR58/ PR58/ PI72 SS	ms. 150 150	DRY GAS METER STACK READING (ft²) TEMP	834.406	8419	\$4(5,3 41	16 1.818	14 7.128	853.3 4	17 2.558	458.2 4	860,8 41	663.4 411	117 1.298	h 8.898	h h.	874,2 41	876,6 41	874,2 41	21K PT8, 188	Total Volume Avg T.	Flue Gas Composition	64 Carbon Dioxide, %	Moisture, %	
	Console ID Meter Corr., Y Console AH@ Probe ID/Length Liner Material Pitot ID/Coeff Thermo ID	Nozzle ID/Diams. Avg. Nozzle Diam.		0)	1.3	1,3	1,3	1,3	1,3	1.3	1,3	1.3	5.7	1.3	1,3	1.3	[13	1.3	1.3	1.3	J 4 AVG AH	Avg VAH	25		
Data	New Indy Catawba, SC 1 Combination Boiler Staub ouxlex 15730.001.008	Mile CL	CLOCK VELOCITY TIME PRESSURE (plant time) △p ◆	(in. H <sub>2</sub> O)	50'	70	19:	14:14 .54	22 .65	,54	PS	12:36 ,36	12,00	1×2 .63	. 66	14, 00,47	116,77		11, 20,2		elevation Avg VAP 64	11 6231	Comments W		
<b>Isokinetic Field D</b>		ق	SAMPLE TIME CL( TII (min)	0	4	80	12	16 12	20 12,	24	28	32   2:	36 12	40	44	48 (13,	52 1.3	56	2 09	64 WHZ	*Barometric Pressure is at port elevation	N. Wille	SOLUTIONS	Integrated Air Services	
Isokine	Client Location/Plant Source Sample Location W. O. Number Run Number	Test Personnel Sample Time	TRAVERSE POINT		A-1 D	2	က	4	Ø-1 ≯	2	6	4	9-18	2	8	4	2-1-0	2	8	4	*Barom	TWV.	3	Integrat	368

																				157	30.001.008
	cks  tial Final  54 .003  60 .000  NCG +506	COMMENTS													ø.,			Vm-std <sup>,</sup> Scf		Calculated by QC by QC by	Machine, t #1-2 CBs ion Report
Page 1 of 1	or Name Checker of Che	SAMPLE TRAIN VACUUM (in Hg)	1.5	2-1	7.1	いら し	2.0	2.0	2,0	2.0	2,6	5,0	2.6	2,0	2.6	2.0.	12.6	Max Vac	Check C	Calci	
	me, f	IMPINGER EXIT TEMP (°F)	65		62	200	900	25	38	49	19	99	29	65	65	39	99	Max Temp	Thermocouple (	Ref. Temp, °F Result	
	Hg H <sub>2</sub> O I14,2 Volu @ V Pritot Filter ID Sample ID	FILTER EXIT TEMP (°F)															/	MinMax	The	~~ 	
	26 ml 26 ml 6 g g	FILTER BOX TEMP (°F)	245	942	5	245	242	244	245	250	256	452	252	250	249	251	150	241 /15	by Orsat Fyrite M3A sck, Pre-run		
	9	PROBE TEMP (°F)	234	235	256	436	236	235	234	233	236	237	238	232	235	233	123d	232/238		Post-run	
Method: EPA 4, Moisture	Ambient Temp. Baro. Pressure* Static Pressure Impinger Gain Silica Gel Gain Stack Area	DGM OUTET F) TEMP (°F)	26	91	15	93		91	92	93	hb	92	92	43	hb	60	44	Avg Tage, S	O <sub>2</sub> /CO <sub>2</sub> Leak Che		
24, N	84 in. 25	DGM INLET TEMP (°F)		0	7	7		20	,	Ω	0				0		/	>			
od: El	498 1,733 3,1733 5,50 1,750	STACK TEMP (°F)	450	920	717		9/5	817	417	420	450	811	415	9111	924	174	024	4 Avg Ts	Flue Gas Composition Oxygen, %	Carbon Dioxide, % Moisture, %	
Meth	PR51 PR51 250	DRY GAS METER READING (ft²)	11/188	M		842.6		400%	463.2	465.8	h'80 h	411.6	1217 L	1,916	919.1	8176	924,371	Total Volume	Flue Gas Co	Carbon Diox Moisture, %	
	Console ID Meter Corr., Y Console AH@ Probe ID/Length Liner Material Pitot ID/Coeff Thermo ID Nozzle ID/Diams. Avg. Nozzle Diam.	ORIFICE PRESSURE 3H (in. H <sub>2</sub> O)	1.3	1,3	1,3	1/2	200	1,3	1.3	1.3	21	1.3	(13	21	1.3	6'1	1.3	A Syl	O John V	NC 65 5065.	
	New Indy Catawba, SC 1 Combination Boiler 15730.001.008 2 6/23/24 AMILICA min.	VELOCITY PRESSURE Ap (in. H <sub>2</sub> O)	09.	19:	AR. 64	1 1. P. J. P.	200	545	36	177	64	03.	139	08.	175	hl:	15.7	1.7658	59389	Comments with	
eld Data	No. 1 Combination SC No. 1 Combination Sc No. 1 Combination 15730.001.008    15730.001.008	CLOCK TIME (plant time)				19:11			911:11	9 h: h!			15:02	15,60			15:25	Barometric Pressure is at port elevation	7		
tic Fie		SAMPLE TIME (min)	4	8	12	16	24	28	32	36	40	44	48	52	46	09	64	etric Pressure	AT A	Integrated Air Services	
<b>Isokinetic Field</b>	Client Location/Plant Source Sample Location W. O. Number Run Number Test Personnel Sample Time	TRAVERSE POINT NO.	A-1 B	2	8	4 7 7		8	4	Ø-1 D	2	8	4	7 18	2	3	4	*Barom	WIE	Integrate	369

						T			30		7.16								Pulp Dr	157: er, #3 Paper -3 SI TVs & Emissi	30.001.008 Machine, & #1-2 CBs
	Final Cock	COMMENTS												k m			/	V <sub>m-std</sub> , scf		Calculated by QC by	ou report
Page 1 of 1	Leak Checks Leak Checks Initial COS Hg 8	SAMPLE SAMPLE TRAIN VACUUM (in Hg)	1.5	1.5	\\\\-\-\-\-\-\-\-\-\-\-\-\-\-\-\-\-\-\	5:-	1.5	511	1.5	1.5	1.5	1.5	1.5	1.5	7:-	1.5	3.0	Max Vac V	%	Calcul	
	K Fame, ft <sup>3</sup>	IMPINGER EXIT TEMP (°F)	99		2	200	63	19	63	59	63	63	64	ee	63	64	63	Max Temp	Thermocouple Check Meter Temp., °F	Ref. Temp, °F Result	
	Personal Sample ID	FILTER EXIT TEMP (°F)															1	Min/Max	The	α <u>ν</u>	
	96 % H. Hg 1,65 in. Hg 68,6 ml 1,46 12,5 g 12,5 g 18.54 ft² 18.54 ft² 18.54 ft²	FILTER BOX <sup>*</sup> TEMP (°F)	237	754	253	255	256	255	952	252	257	254	254	258	255	255	1253	257/25g	rite M3A		
	Sure 24, 8 sure 24, 8 sure 2, 6 Sain 164, 8 Area 78.5	PROBE TEMP (°F)	235	3	238	2 2	236	235	237	234	242	238	237	234	240	238	.237	255/242	O <sub>2</sub> /CO <sub>2</sub> by Orsat Fyrite M3A Leak Check, Pre-run	Post-run	
Moisture	Ambient Temp. 4 Baro. Pressure* 24 Static Pressure 7 Impinger Gain 164 Silica Gel Gain 164 Stack Area 78 Total Traverse Points	DGM OUTET TEMP (°F)		45	95	00	96	74	23	99	98	84	loc	100	96	9	68	9Tg.7.5(	O <sub>2</sub> /CO <sub>2</sub> Leak Che		
	, 25 o	DGN INLET TEMP (°F)															1	Avg	no		
ethod: EPA 4,	10 10 132 732 732 610 610 610	STACK TEMP (°F)	916	9116	SIL	4117	hlh	hlh	17/6	2116	911	911	hlh	2116	C1h	かか	SIK	4 IS 25	ompositie	oxide, %	
Metho	10 ACI   10	DRY GAS METER READING (#³)	5	34.	8,25%	938.1	1,049	443.5	9.946	4.18.5	452.0	954,3	956.6	959,2	9.793	9.4.6	467.370	Total Volume V	Flue Gas Composition Oxygen, %	9'Carbon Dioxide, % Moisture, %	
	Console ID Meter Corr., Y Console △H@ Probe ID/Length Liner Material Pitot ID/Coeff. Thermo ID Nozzle ID/Diams. Avg. Nozzle Diam.	ORIFICE D PRESSURE AH (in. H <sub>2</sub> O)	5.	1.7	1,2	1.1	1,3	1.3	1.3	1.3	1,3	1,3	1.3	1.3	1.3	1.3		AVB AH	Avg VAH	05 t a	
	Soiler A A A	VELOCITY PRESSURE Ap (in. H <sub>2</sub> O)	, 54	.62	000	200	. 55	50	35.	174	, 6 q	8 1,	94,	177,	.75	72	09"	/AND VAP 44	5925	nts w W	
d Data	Catawba 1 Combina 1 Combina 1 S730.001 3 3 6 12 A 1 L	CLOCK TIME (plant time)			17:51	15:06			16:23	16:24			Sh!91	16:54			17:10	7	52	NS. Comments	
<b>Isokinetic Field</b>	Client Location/Plant Source No. ample Location W. O. Number Run Number Date Test Personnel Sample Time	SAMPLE TIME (min)	4	ω	12	20	24	28	32	36	40	44	48	52	56	09	64	*Barometric Pressure is at port elevation		Integrated Air Services	
Isokine	Client Location/Plant Source Sample Location W. O. Number Run Number Run Number Test Personnel Sample Time	TRAVERSE POINT NO.	A1B	2	е ,	4 4 4 1 × 1 × 1 × 1 × 1 × 1 × 1 × 1 × 1	2	e	4	Q-1 D	2	3	4	0216	2	8	4	*Barome	WIE	Integrate	370

#### Sample Recovery Field Data

Method: EPA 4, Moisture

Location	Client(Plant	New Indy Catawba, SC	ngers 1 - 3 measure		Source O. Number	No. 1 Com 1573		oiler
D. N.		Шри			Page	overy Date	6122	121
Run No.		. 1		6/23/21	Reco		Manager Manager	
Sample ID	Run Ar	MINCETS	66 Filter ID			Analyst	ATR	
	1	2	3	npingers		Imp. Total	Silica Gel	Total
Contents	Pi	DI	empti				grams	
Final	776.1	906,4	643,4				945.5	
Initial	641.1	774.8	638.5	United States			929,5	
Gain	124/	26.6 V	4,9 1			160.5		17615
Im	pinger Color	lear			Labled?	11	1	1/
	el Condition	used			Sealed?	~		
								1 16 4
Run No.	2		Sample Date	6/23/21	Reco	overy Date	6/23/	121
Sample ID	run 2	WNC6+S		NA			Ath	
				npingers	A SHEET			
		2	3			Imp.Total	Silica Gel	Total
Contents	PI	P#	empt1				grams	
Final	914,3	828.2	646.7	Market Market State of the Stat	Mar Line	Maria (Ciri	933.1	
Initial	770.1	806,4	643.4				922,5	N. S.
Gain	144.2 /	21.8	3.6			168.6	10.6	128,2
lm	pinger Color	Clear	3.3	/	Labled?	剂人		179.9-
Silica G	el Condition	good	AN /		Sealed?			AB
		1 3/2						-//-
Run No.	3		Sample Date	6/23/2	/ Reco	overy Date	6123	121
Sample ID	Run3	W1 NC6 +3	06 Filter ID	IVA		Analyst	XTR	
				npingers				
	1	2	3	W. Will		Imp.Total	Silica Gel	Total
Contents	DI	D#	enpty				grams	8/8 (D#Y)
Final	874,3	788.9	635.2				401.7	
Initial	763.9	763.8	628.4			V	784.2	
Gain	115.4/	25,1	6.3			144.8	12.5	159.3
Im	pinger Color	clear			Labled?	_		V
Silica G	el Condition	used	S. S. Say Control of		Sealed?			
Last tool								

Check COC for Sample IDs of Media Blanks





#### Sample and Velocity Traverse Points - Method 1

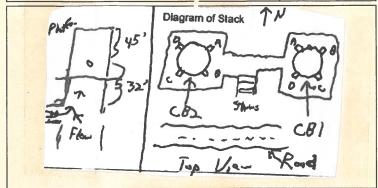
Client	New Indy	Source No. 1 Combination Boiler
Loaction/Plant	Catawba, SC	W.O. Number <u>15730.001.008</u>
Operator	VD	Date <u>6/23/21</u>
Duct Type	☑ Circular	Rectangular
Traverse Type	□ Particulate Traverse	✓ Velocity Traverse ☐ Stratification Traverse

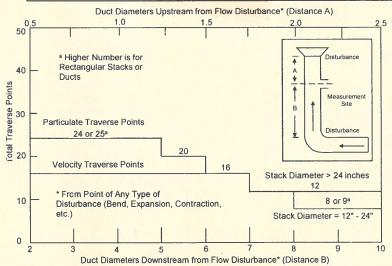
Depth, far wall to outside of port (in) = C	127.5
Port Depth (in) = D	7.5
Depth of Duct, diameter (in) = C - D	120
Area of Duct (ft <sup>3</sup> )	78.54
Number of Ports	4
Traverse Points per Port	4
Total Traverse Points	16

Rectangular Ducts Only	
Width of Duct (in)	
Equivalent Diameter (in)	

		Distance from	Distance from
Traverse		Inside Duct	Outside of
Point	% of Duct	Wall (in)	Port (in)
1	3.2	3.9	11.4
2	10.5	12.6	20.1
3	19.4	23.3	30.8
4	32.3	38.8	46.3

Flow Disturbances	
Upstream - A (ft)	45
Downstream - B (ft)	32
Upstream - A (duct diameters)	4.5
Downstream - B (duct diameters)	3.2





				Т	raver	se Po	int Lo	catio	n % (	of Sta	ck - C	ircula	r	
						N	ımbei	of Tr	avers	e Poin	ts			142
			1	2	3	4	5	6	7	8	9	10	11	12
T		1		14.6	- 1	6.7		4.4		3.2	W.	2.6		2.1
r		2		85.4		25.0	Artice.	14.6	442	10.5		8.2		6.7
a		3				75.0		29.6		19.4	Wan.	14.6	, Y	11.8
V e	L	4		W.		93.3		70.4		32.3		22.6		17.7
Г	0	5			1			85.4		67.7		34.2		25.0
s	а	6				機能	200	95.6		80.6		65.8		35.6
e	t	7	g						E.W.	89.5	115	77.4		64.4
P	ı	8		les for	100	200				96.8		85.4		75.0
0	n	9				378		TIME		500		91.8		82.3
i		10					700	de los				97.4		88.2
n		11		1111			22 11	E.		1200				93.3
1		12		Hiring	1	4.7	180	N. F.	回复)					97.9

				Tra	verse	Poin	t Loca	ation	% of	Stack	- Rec	tangi	ılar	
						N	ımber	of Tr	avers	e Poir	.s	814		
			1	2	3	4	5	6	7	8	9	10	11	12
Т		1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
r		2	9/9/	75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
a		3		TAV.	83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
V e	L	4				87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
ı	0	5		198	THE		90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
s	a	6		差集	300	WEST.		91.7	78.6	68.8	61.1	55.0	50.0	45.8
е	t	7							92.9	81.3	72.2	65.0	59.1	54.2
P	0	8	1		THE S				T.	93.8	83.3	75.0	68.2	62.5
0	n	9			AL ST			-			94.4	85.0	77.3	70.8
i	a la	10		1021011 2013			P. Control			Market Mark		95.0	86.4	79.2
n		11	ANY	111	New Year	Male:		17.	E 16				95.5	87.5
L		12												95.8

Red	cta	ng	ula	ar	
Sta	ck	Po	in	ts	
8	M	latr	ix		
9	-	3	x	3	
12	-	4	x	3	
16	-	4	х	4	
20	-	5	х	4	
25	-	5	х	5	
30	-	6	х	5	
36	-	6	x	6	
42	-	7	X	6	
49	-	7	X	7	

Tape measure ID



Number 1

Client: New Indy

Location: Catawba, NC

Source: #1 Combination Boiler

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time 11:58

**End Time** 12:58

Average Measured TRS Conc. Recovery No. 2

**TRS Corrected for Recovery** 

0.67 ppm 86.2 %

0.78 **ppm** 

1,09

8130

ABY J

Number 2

Client: New Indy

Location: Catawba, NC

Source: #1 Combination Boiler

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

Date: 23 Jun 2021

Start Time 14:00

**End Time** 15:00

**Average Measured TRS Conc.** 

Recovery No. 2

**TRS Corrected for Recovery** 

0.61 ppm

Q.760.92

86.2 %

0.71 ppm

Number 3

Client: New Indy

Location: Catawba, NC

Source: #1 Combination Boiler

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time 15:41

**End Time** 16:41

Average Measured TRS Conc. Recovery No. 2

TRS Corrected for Recovery

0.75 0.89

0.60 ppm 86.2 %

0,70 ppm

A)30

RS /

<	ι
Н	_
ż	1
2	3
Н	-
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	Ξ
=	_
0	2

Number 1

			1.33038																				
	TRS	mdd	0.94	0.91	0.92	0.91	0.93	0.93	0.93	0.94	0.94	0.93	0.94	0.94	0.95	0.93	96.0	96.0	0.94	0.95	0.95	0.92	0.94
1.008		v	0.071	0.071	0.071	0.071	0.071		0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071		0.071	0.071	
15730.001.008 VD 23 Jun 2021	DMDS	mdd						0.08												0.07			
Project Number: Operator: Date:		area	\$ \$	<2	<b>~</b>	<b>~</b>	<2	7	<b>~</b>	7	<b>%</b>	7	<b>~</b>	7	<b>~</b>	<b>~</b>	<2	7	7	2	7	<2	
Project I		v	0	0	0	0	0	0	0	0	0		0	0	0	0			0	0	0	0	
	DMS	mdd										0.17					0.17	0.17					
9 <b>-</b>		area	<2 2	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	7	<b>%</b>	7	2	7	7	<b>~</b>	7	7	7	<b>%</b>	<b>%</b>	<b>%</b>	<2	
Method: 16 Calibration:		<b>v</b>																					
≥ ర	MeSH	ppm	0.54	0.53	0.53	0.54	0.54	0.54	0.55	0.55	0.55	0.55	0.56	0.57	0.58	0.56	0.56	0.57			0.57	0.55	
		area	0	35	35	36	37	37	37	38	37	38	33	40	41	39	39	40	36	41	41	38	
Soiler		<b>v</b>																					
New Indy Catawba, NC #1 Combination Boiler	H <sub>2</sub> S	ppm	60.0	0.08	0.08	0.07	0.09	0.07	0.08	0.08	0.08	0.07	0.08	0.07	0.07	0.07	0.09	0.08	0.08	0.07	0.07	0.07	0.08
New Indy Catawba, NC #1 Combinat		area	4	က	က	က	က	က	က	က	က	7	က	7	2	က	4	က	က	7	2	7	
Client: Location: Source:		Time	11:58	12:01	12:04	12:07	12:10	12:13	12:16	12:19	12:22	12:25	12:28	12:31	12:34	12:37	12:40	12:43	12:46	12:49	12:52	12:55	Averages

Number 2

			TRS	mdd	0.89	0.92	0.89	0.92	1.03	0.92	0.94	0.91	0.94	0.95	0.90	0.90	0.92	0.30	0.88	0.90	0.89	0.89	0.93	0.92	0.92
1.008		121		V	0.071	0.071	0.071	0.071		0.071	0.071	0.071	0.071		0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071		
15730.001.008	ΛD	23 Jun 2021	DMDS	mdd					0.12					0.09										0.08	
Project Number:	Operator:	Date:		area	<2	<b>~</b>	<b>~</b>	<b>~</b>	2	<2	7	7	<b>~</b>	က	7	<b>~</b>	3								
Project N	0			V	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16		0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
			DMS	mdd									0.20												
	"	-		area	<b>~</b>	7	7	7	<b>~</b>	<b>~</b>	<b>%</b>	<b>%</b>	က	7	<b>%</b>	7	<b>~</b>	<b>~</b>	<b>~</b>	<b>%</b>	<b>~</b>	<b>~</b>	<b>~</b>	<2	
	Method: 16	Calibration:		v																					
	2	ပိ	MeSH	mdd	0.52	0.53	0.52	0.54	0.54	0.55	0.55	0.53	0.53	0.53	0.54	0.53	0.55	0.53	0.52	0.54	0.52	0.52	0.55	0.52	
				area	34	35	34	36	36	37	37	35	35	35	36	35	37	35	34	36	34	34	37	34	
					90.0	0.08	90.0	0.08	0.09	0.07	0.09	0.09	0.07	90.0	90.0	90.0	0.08	90.0	90.0	90.0	90.0	0.07	0.08	90.0	0.07
		3oiler	S	v	0.064		0.064							0.064	0.064	0.064		0.064	0.064	0.064	0.064			0.064	
>	ı, NC	#1 Combination Boiler	H <sub>2</sub> S	mdd		0.08		0.08	0.09	0.07	60.0	0.09	0.07				0.08					0.07	0.08		
New Indy	Catawba, NC	#1 Com		area	\$	က	7	က	4	2	4	က	7	<b>%</b>	<b>%</b>	<b>~</b>	က	<b>%</b>	<b>~</b>	<b>~</b>	<b>~</b>	7	က	<2	
Client:	Location:	Source:		Time	14:00	14:03	14:06	14:09	14:12	14:15	14:18	14:21	14:24	14:27	14:30	14:33	14:36	14:39	14:42	14:45	14:48	14:51	14:54	14:57	Averages

Number 3

		TRS	mdd	0.89	0.84	0.87	0.85	0.30	0.89	0.94	0.98	0.97	0.89	0.91	0.93	0.98	0.88	0.88	98.0	0.85	98.0	0.85	98.0	0.89
1.008	124		v	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071		0.071	0.071	0.071		0.071		0.071	0.071	0.071	0.071	0.071	
15730.001.008	VD 23 Jun 2021	DMDS	mdd									0.09				0.08		0.08						
Project Number:	Operator: Date:		area	\$	7	7	7	7	<b>%</b>	7	7	က	<b>~</b>	<b>%</b>	<b>~</b>	က	7	က	<b>~</b>	<2	<b>~</b>	<b>~</b>	<2	
Project I	0		v	0.16	0.16	0.16	0.16		0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
		DMS	mdd					0.19																
9	9 -		area	\$	7	7	7	က	7	<b>~</b>	<b>%</b>	7	<b>~</b>	<b>4</b>	<b>4</b>	<b>~</b>	<b>4</b>	<2	<2	<2	<b>~</b>	7	<2	
;	Method: 16 Calibration: '		v																					
•	- 0	MeSH	mdd	0.51	0.48	0.47	0.48	0.50	0.48	0.48	0.49	0.49	0.47	0.49	0.48	0.48	0.49	0.49	0.49	0.49	0.48	0.49	0.48	
			area	32	59	28	59	31	59	59	30	30	28	30	29	53	30	30	30	30	59	30	29	
				0.08	90.0	0.09	90.0	90.0	0.11	0.15	0.19	0.15	0.11	0.13	0.14	0.17	0.08	90.0	0.08	90.0	0.08	90.0	0.08	0.10
	Boiler	H <sub>2</sub> S	v		0.064		0.064	0.064										0.064		0.064		0.064		
γþ	Catawba, NC #1 Combination Boiler	I	mdd	0.08		0.09			0.11	0.15	0.19	0.15	0.11	0.13	0.14	0.17	0.08		0.08		0.08		0.08	
	Catawba, NC #1 Combinati		area	က	<b>~</b>	4	7	<b>~</b>	2	10	15	တ	2	7	∞	7	က	<b>~</b>	က	<b>~</b>	က	<b>~</b>	3	
Client:	Location: Source:		Time	15:41	15:44	15:47	15:50	15:53	15:56	15:59	16:02	16:05	16:08	16:11	16:14	16:17	16:20	16:23	16:26	16:29	16:32	16:35	16:38	Averages

Number 1

Client: New Indy Location: Catawba, NC

Source: #1 Combination Boiler

Method 16 Calibration 1 Project Number: **15730.001.008**Operator: **VD** 

<b>T</b> :	Н	<sub>2</sub> S	Me	SH	DI	MS	DN	/IDS	TRS
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
11:58	4	0.09	37	0.54	<2	<0.16	<2	<0.071	0.64
12:01	3	0.08	35	0.53	<2	< 0.16	<2	< 0.071	0.61
12:04	3	0.08	35	0.53	<2	< 0.16	<2	< 0.071	0.62
12:07	3	0.07	36	0.54	<2	< 0.16	<2	< 0.071	0.61
12:10	3	0.09	37	0.54	<2	< 0.16	<2	< 0.071	0.63
12:13	3	0.07	37	0.54	<2	< 0.16	2	0.08	0.77
12:16	3	0.08	37	0.55	<2	< 0.16	<2	< 0.071	0.63
12:19	3	0.08	38	0.55	<2	< 0.16	<2	< 0.071	0.64
12:22	3	0.08	37	0.55	<2	< 0.16	<2	< 0.071	0.63
12:25	2	0.07	38	0.55	2	0.17	<2	< 0.071	0.79
12:28	3	0.08	39	0.56	<2	< 0.16	<2	< 0.071	0.64
12:31	2	0.07	40	0.57	<2	< 0.16	<2	< 0.071	0.63
12:34	2	0.07	41	0.58	<2	< 0.16	<2	< 0.071	0.65
12:37	3	0.07	39	0.56	<2	< 0.16	<2	< 0.071	0.63
12:40	4	0.09	39	0.56	2	0.17	<2	< 0.071	0.82
12:43	3	0.08	40	0.57	2	0.17	<2	< 0.071	0.82
12:46	3	0.08	39	0.56	<2	< 0.16	<2	< 0.071	0.64
12:49	2	0.07	41	0.57	<2	<0.16	2	0.07	0.79
12:52	2	0.07	41	0.57	<2	< 0.16	<2	< 0.071	0.64
12:55	2	0.07	38	0.55	<2	<0.16	<2	< 0.071	0.62
Average	-	0.08		0.55		<0.16		<0.071	0.67 🗸





Number 2

Client: New Indy Location: Catawba, NC

Source: #1 Combination Boiler

Method 16 Calibration 1 Project Number: **15730.001.008**Operator: **VD** 

T:	H	I <sub>2</sub> S	Ме	SH	DI	MS	DN	MDS	TRS
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
14:00	<2	<0.064	34	0.52	<2	<0.16	<2	<0.071	0.52
14:03	3	0.08	35	0.53	<2	< 0.16	<2	< 0.071	0.61
14:06	<2	< 0.064	34	0.52	<2	< 0.16	<2	< 0.071	0.52
14:09	3	0.08	36	0.54	<2	< 0.16	<2	< 0.071	0.62
14:12	4	0.09	36	0.54	<2	< 0.16	5	0.12	0.87
14:15	2	0.07	37	0.55	<2	< 0.16	<2	< 0.071	0.61
14:18	4	0.09	37	0.55	<2	< 0.16	<2	< 0.071	0.64
14:21	3	0.09	35	0.53	<2	< 0.16	<2	< 0.071	0.61
14:24	2	0.07	35	0.53	3	0.20	<2	< 0.071	0.80
14:27	<2	< 0.064	35	0.53	<2	< 0.16	3	0.09	0.72
14:30	<2	< 0.064	36	0.54	<2	< 0.16	<2	< 0.071	0.54
14:33	<2	< 0.064	35	0.53	<2	< 0.16	<2	< 0.071	0.53
14:36	3	0.08	37	0.55	<2	< 0.16	<2	< 0.071	0.62
14:39	<2	< 0.064	35	0.53	<2	< 0.16	<2	< 0.071	0.53
14:42	<2	< 0.064	34	0.52	<2	< 0.16	<2	< 0.071	0.52
14:45	<2	< 0.064	36	0.54	<2	< 0.16	<2	< 0.071	0.54
14:48	<2	< 0.064	34	0.52	<2	< 0.16	<2	< 0.071	0.52
14:51	2	0.07	34	0.52	<2	<0.16	<2	< 0.071	0.59
14:54	3	0.08	37	0.55	<2	< 0.16	<2	< 0.071	0.62
14:57	<2	<0.064	34	0.52	<2	<0.16	3	0.08	0.69
Average		<0.064		0.53		<0.16		<0.071	0.61 🗸





Number 3

Client: New Indy Location: Catawba, NC

Source: #1 Combination Boiler

Method 16 Calibration 1 Project Number: **15730.001.008**Operator: **VD** 

Time	F area	I₂S ppm	Me area	SH ppm	DI area	MS ppm	DN area	/IDS ppm	TRS ppm
15:41	3	0.08	32	0.51	<2	<0.16	<2	<0.071	0.58
15:44	<2	< 0.064	29	0.48	<2	< 0.16	<2	< 0.071	0.48
15:47	4	0.09	28	0.47	<2	< 0.16	<2	< 0.071	0.57
15:50	<2	< 0.064	29	0.48	<2	< 0.16	<2	< 0.071	0.48
15:53	<2	< 0.064	31	0.50	3	0.19	<2	< 0.071	0.69
15:56	5	0.11	29	0.48	<2	< 0.16	<2	< 0.071	0.59
15:59	10	0.15	29	0.48	<2	< 0.16	<2	< 0.071	0.64
16:02	15	0.19	30	0.49	<2	< 0.16	<2	< 0.071	0.68
16:05	9	0.15	30	0.49	<2	< 0.16	3	0.09	0.81
16:08	5	0.11	28	0.47	<2	< 0.16	<2	< 0.071	0.58
16:11	7	0.13	30	0.49	<2	<0.16	<2	< 0.071	0.61
16:14	.8	0.14	29	0.48	<2	< 0.16	<2	< 0.071	0.62
16:17	11	0.17	29	0.48	<2	< 0.16	3	0.08	0.82
16:20	3	0.08	30	0.49	<2	< 0.16	<2	< 0.071	0.58
16:23	<2	< 0.064	30	0.49	<2	< 0.16	3	0.08	0.65
16:26	3	0.08	30	0.49	<2	< 0.16	<2	< 0.071	0.56
16:29	<2	< 0.064	30	0.49	<2	< 0.16	<2	< 0.071	0.49
16:32	3	0.08	29	0.48	<2	< 0.16	<2	< 0.071	0.56
16:35	<2	< 0.064	30	0.49	<2	< 0.16	<2	< 0.071	0.49
16:38	3	0.08	29	0.48	<2	<0.16	<2	<0.071	0.56
Average		0.08		0.49		<0.16		<0.071	0.60 /





Number 7

Client: New Indy

Location: Catawba, NC Source: #1 Combination Boiler

Method 16 Calibration 2 Project Number: **15730.001.008**Operator: **VD** 

Time	H <sub>2</sub>	S	Me	SH	D	MS	DN	<b>IDS</b>	TRS
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
			C	C416806	7.257 pp	m			
12:28	14344	7.79	<2	< 0.12	<2	< 0.077	<2	< 0.036	7.79
12:31	14847	7.94	<2	< 0.12	<2	< 0.077	<2	< 0.036	7.94
12:34	15003	7.98	<2	<0.12	2	0.09	<2	<0.036	8.07
Average		7.90	1	<0.12		<0.077		<0.036	<b>7.93</b>



#### RECOVERY DATA

Number 1

Client: New Indy

Location: Catawba, NC

Source: #1 Combination Boiler

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Before Run 1

Start Time 08:30

**End Time** 08:43

Recovery Gas to Probe, Time 08:30

Peak Areas, mv-sec

11433

11272

11506

Average

ppm

11403 🗸 7.65

Recovery Gas to GC, Time 08:40

Peak Areas, mv-sec

13047 13101

13148

Average

ppm

13098 8.26

Recovery 92.6%

#### **RECOVERY DATA**

Number 2

Client: New Indy

Location: Catawba, NC

Source: #1 Combination Boiler

Method 16

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

After Run 3 Before Run 4

Start Time 16:45

**End Time** 17:12

Recovery Gas to Probe, Time 16:45

Peak Areas, mv-sec

10559

10796

10726

Average

**ppm** 7.38

10694

Recovery Gas to GC, Time 17:07

Peak Areas, mv-sec

14018

13986

14003

Average

ppm

14002 / 8.57

Recovery 86.2% /

#### **RECOVERY DATA**

Number 3

Client: New Indy

Location: Catawba, NC

Source: #1 Combination Boiler

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

After Run 6 Before Run 7

Start Time 23:08

**End Time** 23:33

**Recovery Gas to Probe, Time 23:08** 

Peak Areas, mv-sec

12008

11871

12366

Average

ppm

12082 / 7.90

Recovery Gas to GC, Time 23:30

Peak Areas, mv-sec

14235

14081

Average

ppm

14141 / 8.62

Recovery 91.7%  $\sqrt{\phantom{0}}$ 

14105



#### **CALIBRATION DATA**

Number 1

Client: New Indy Location: Catawba, NC

Project Number: 15730.001.008

Operator: **VD** 

Source: #1 Combination Boiler Method 16

	Temperature: 72°C		ressure: 29.25 in. H	•
Analyte	H <sub>2</sub> S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	351	369	477	241
Ret. Time, sec	16.0	22.5	48.0	127.0
1 Flow = 27.4 mL/Min	<b>12.8</b> ppm	<b>13.5</b> ppm	<b>17.4</b> ppm	<b>8.81</b> ppm
Time: 06:00		Peak Areas		
	28200	16074	not	not
	27714	15989	used	used
	27544	15970		
Average Area	27819	16011		
2 Flow = 59.5 mL/Min	<b>5.90</b> ppm	<b>6.20</b> ppm	<b>8.02</b> ppm	<b>4.06</b> ppm
Time: 06:49		Peak Areas	, mv-sec	
	7504	3841	12348	15296
	7611	3774	12960	15012
	7641	3823	12909	15325
Average Area	7585	3813	12739	15211 /
3 Flow = 131 mL/Min	<b>2.68</b> ppm	<b>2.82</b> ppm	<b>3.64</b> ppm	<b>1.84</b> ppm
Time: 07:28		Peak Areas	, mv-sec	
	1734	856	2868	3422
	1702	845	2771	3379
	1690	846	2788	3411
Average Area	1709	849	2809	3404
4 Flow = 271 mL/Min	<b>1.30</b> ppm	<b>1.36</b> ppm	<b>1.76</b> ppm	<b>0.89</b> ppm
Time: 07:53		Peak Areas	<u> </u>	
	440	204	681	847
	433	209	682	842
	472	206	671	834
Average Area	448	206	678	841 /



#### **CALIBRATION SUMMARY**

Number 1

Client: New Indy

Location: Catawba, NC

Source: #1 Combination Boiler

Method 16

Project Number: 15730.001.008

Operator: **VD** 

H <sub>2</sub> S	1	2	3	4		
Time	06:00	06:49	07:28	07:53		
Concentration, ppm	12.8	5.90	2.68	1.30		
Area, mv-sec	27819	7585 ´	1709	448		
Calc. Conc., ppm	12.5	6.11	2.68	1.28		
% Error	-2.3	3.5	0.0	-1.2		
<b>Calibration Curve</b>	Slope	Intercept	Corr	. Coeff.	Min. Area	Det. Lim.
	1.8102	2.4572	0.	9997	2	0.064
MeSH	1	2	3	4		
Time	06:00	06:49	07:28	07:53		
Concentration, ppm	13.5	6.20	2.82	1.36		
Area, mv-sec	16011	3813	849	200	*	
Calc. Conc., ppm	13.3	6.26	2.84	1.35		
% Error	-0.9	1.0	0.9	-0.9		
Calibration Curve	Slope	Intercept		. Coeff.	Min. Area	Det. Lim.
	1.8989	2.0680	0.	9999	2	0.12
DMS	1	2	3			
Time	06:49	07:28	07:53			
Concentration, ppm	8.02	3.64	1.76			
Area, mv-sec	12739	2809	678			
Calc. Conc., ppm	17.6	7.86	3.68			
% Error	119.4	115.7	109.0			
Calibration Curve	Slope	Intercept		r. Coeff.	Min. Area	Det. Lim.
Campiation Carve	1.8747	1.7700		9997	2	0.16
DMDS	1	2	3			
Time	06:49	07:28	07:53			
Concentration, ppm	4.06	1.84	0.89			
Area, mv-sec	15211	3404	841	4		
Calc. Conc., ppm	8.91	3.97	1.86			
% Error	119.6	115.3	109.2			
<b>Calibration Curve</b>	Slope	Intercept	Cori	r. Coeff.	Min. Area	Det. Lim.
	1.8501	2.4250		9997	2	0.071



#### **CALIBRATION DATA**

Number 2

Client: New Indy

Location: Catawba, NC

Source: #1 Combination Boiler

Method 16

Project Number: 15730.001.008

Operator: **VD** 

Ambien	t Temperature: 72°C	Barometric P	ressure: 29.25 in. H	g
Analyte	H <sub>2</sub> S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	351	369	477	241
Ret. Time, sec	16.0	22.5	48.0	127.0
4 Flow = 27.6 ml /Min	0.24 nnm	0.94 nnm	42.7 nnm	6 42 nnm
1 Flow = 37.6 mL/Min	<b>9.34</b> ppm	9.81 ppm	<b>12.7</b> ppm	<b>6.42</b> ppm
Time: 07:00	40700	Peak Areas		00040
	19790	9921	31382	38948
	20319	10076	31742	38693
	19852	9986	30214	37936
Average Area	19987 🗸	9995 🗸	31113 🗸	38526 🗸
2 Flow = 82.8 mL/Min	<b>4.24</b> ppm	<b>4.46</b> ppm	<b>5.77</b> ppm	<b>2.92</b> ppm
Time: 11:03		Peak Areas	s, mv-sec	
	4788	2266	7435	8918
	4588	2209	7188	8687
	4419	2218	7198	8791
Average Area	4598 🗸	2231	7274	8798 🗸
3 Flow = 180 mL/Min	<b>1.95</b> ppm	<b>2.05</b> ppm	<b>2.66</b> ppm	<b>1.34</b> ppm
Time: 11:47		Peak Areas	s, mv-sec	
	998	492	1607	1968
	985	496	1607	1963
	982	497	1614	1971
Average Area	988	495	1609	1967



#### **CALIBRATION SUMMARY**

Number 2

Client: New Indy

Project Number: 15730.001.008

Operator: **VD** 

Source: #1 Combination Boiler

Location: Catawba, NC

Method 16

H <sub>2</sub> S	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	9.34 ,	4.24	1.95		
Area, mv-sec	19987 /	4598 /	988		
Calc. Conc., ppm	9.26	4.31	1.94		
% Error	-0.8	1.6	-0.8		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9212	2.4433	0.9998 `	2	0.077
MeSH	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	9.81	4.46	2.05		
Area, mv-sec	9995	2231	495		
Calc. Conc., ppm	9.79	4.48	2.05		
% Error	-0.3	0.5	-0.3		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9203	2.0975	>0.9999 '	2	0.12
DMS	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	12.7	5.77 <	2.66		
Area, mv-sec	31113	7274 ′	1609		
Calc. Conc., ppm	12.6	5.85	2.64		
% Error	-0.7	1.4	-0.7		
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8927	2.4098	0.9999	2	0.077
DMDS	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	6.42	2.92	1.34 /		
Area, mv-sec	38526		1967 /		
Calc. Conc., ppm	6.39	2.94	1.34		
% Error	-0.4	0.8	-0.4		
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.
	1.9009	3.0543	>0.9999	2	0.036



#### **ANALYTES AND STANDARDS**

Client: New Indy Project Number: 15730.001.008

Operator: **VD** 

Source: #1 Combination Boiler Method 16 Date: 22 Jun 2021

Analyte Molecular Weight	<b>H₂S</b> 34.08	<b>MeSH</b> 48.11	<b>DMS</b> 62.14	<b>DMDS</b> 94.20
Retention Time, sec	16.0	22.5	48.0	127.0
Peak Detection Window, sec	3.0	7.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	2.0	3.0
Ending Peak Width, sec	2.0	6.0	4.0	5.0
Permeation Device ID	T-51828	33-53274	89-53332	89-53266
Permeation Rate, ng/min	483 🗸	716	1197	918
Permeation Rate, nL/min*	351	369	477	241

Barometric Pressure: 29.25 in. Hg Ambient Temperature: 72 °F

No Oxygen Correction

\*Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min. Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

 $PR_{nl} = PR_{ng} x (V_{mol} / W_{mol}) x [(460^{\circ} + T_a) / T_s] x (P_s / P_b)$ 

Where:

Location: Catawba, NC

PR<sub>nl</sub> = Permeation Rate by volume, nL/minPR<sub>ng</sub> = Permeation Rate by weight, ng/min

V<sub>mol</sub> = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

 $\mathbf{W}_{mol}$  = Molecular Weight of compound

T<sub>a</sub> = Ambient Temperature, °F

T<sub>s</sub> = Standard Temperature = 492°R (32 °F)

P<sub>s</sub> = Standard Pressure = 29.92 in Hg

P<sub>b</sub> = Barometric Pressure, in Hg

For example, H<sub>2</sub>S:

 $PR_{nl} = 483 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.25)$ 

= 351 nL/min

To calclate concentrations:

 $C = PR_{nl} / F_{d}$ 

Where:

**C** = Concentration, ppmv

**PR**<sub>nl</sub> = Permeation Rate by volume, nL/min

F<sub>d</sub> = Flow rate of diluent, mL/min

#### INSTRUMENT INFORMATION

Client: New Indy

Project Number: 15730.001.008

Location: Catawba, NC

Operator: **VD** 

Source: #1 Combination Boiler

Method 16

Date: 22 Jun 2021

File: C:\Data\210623 New Indy Catawba No. 1 CB.trs

Program Version: 2.0, built 15 May 2017 File Version: 2.0

Computer: WLT5 Trailer: 281

Analog Input Device: MCC USB-1608G

GC Channel: 16

Sampling Rate: 0.050 sec.

Data Interval: 0.5 sec.

Gas Chromatograph: Shimadzu GC8-A Serial No. C10493615061

**Detector Range: 10** 

	Gases		Temperatures, °C	Columns
	Press. psi	Flow mL/min	Column: 140	Primary: Carbopack
H <sub>2</sub>	30	50	Detector: 140	Secondary: N/A
Air	30	60		Sample Loop: 4"
Carrier	50	30		•

#### **Injection Cycle**

Total Length: 180 sec

Sampling Time: 170 sec

Load/Backflush Time: 80 sec

#### **Default Integration Parameters**

Signal Threshold 0.67 mv Peak detection window ±10 sec Minimum peak area 2 mv-sec Minimum peak height 1 mv above baseline

#### **Dynacalibrator**

Chamber Temperature 50.0°C Ambient Temperature 72.0°F Barometric Pressure 29.25 in. Hg

Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

O2         CO2         SO2           EPA 3A         EPA 3A         EPA 6           %         %         ppm
--

Time: 11:58 to 12:58

#### **Run Averages**

11.9 7.8 190

#### Pre-run Bias at 10:56

Zero Bias	0.0	0.0	6
Span Bias	10.0	10.1	234
Span Gas	10.1	10.2	242

#### Post-run Bias at 13:01

Zero Bias	0.0	0.0	3
Span Bias	10.0	10.2	235
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

12.1 / 7.8 / 195 /

KV/

Number 2

Client: New Indy

Project Number: 15730.001.008

Operator: **VD** 

Location: Catawba, SC

Date: 23 Jun 2021 Calibration 1

Source: No. 1 Combination Boiler

Method Conc. Units

$O_2$
EPA 3A
%

Time: 14:00 to 15:00

#### **Run Averages**

- 1	1	2
- 1	- 1	. U

8.4

267

#### Pre-run Bias at 13:01

Zero Bias	0.0	0.0	3
Span Bias	10.0	10.2	235
Span Gas	10.1	10.2	242

#### Post-run Bias at 15:04

Zero Bias	0.0	0.0	5
Span Bias	10.0	10.2	232
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

11.4 / 8.4



Number 3

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

	$O_2$	CO <sub>2</sub>	SO <sub>2</sub>
Method	EPA 3A	EPA 3A	EPA 6C
Conc. Units	%	%	ppm

Time: 15:41 to 16:41

#### **Run Averages**

11.9 7.7 328

#### Pre-run Bias at 15:04

Zero Bias	0.0	0.0	5	
Span Bias	10.0	10.2	232	
Span Gas	10.1	10.2	242	

#### Post-run Bias at 16:43

Zero Bias	0.0	0.0	8
Span Bias	10.0	10.1	234
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

12.0 / 7.7 / 344 /



Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Time	O <sub>2</sub> CO <sub>2</sub>			SO <sub>2</sub>						
Time	mv	%	mv	%	mv	ppm				
With NCGs & SOGs										
11:59	3900	11.7	3282	8.1	1867	187				
12:00	3863	11.6	3222	8.0	1924	193				
12:01	3790	11.4	3276	8.1	1958	196				
12:02	3761	11.3	3348	8.3	1906	191				
12:03	3751	11.3	3375	8.4	2086	209				
12:04	3680	11.1	3408	8.4	2212	221				
12:05	3691	11.1	3474	8.6	2000	200				
12:06	3760	11.3	3448	8.5	1798	180				
12:07	3833	11.5	3382	8.4	1847	185				
12:08	3834	11.5	3295	8.2	2034	204				
12:09	3821	11.5	3293	8.2	1797	180				
12:10	3851	11.6	3318	8.2	1571	157				
12:11	3980	12.0	3262	8.1	1774	178				
12:12	3983	12.0	3137	7.8	2126	213				
12:13	3919	11.8	3133	7.8	1792	179				
12:14	3885	11.7	3214	8.0	1646	165				
12:15	3860	11.6	3254	8.1	1719	172				
12:16	3866	11.6	3283	8.1	2175	218				
12:17	3926	11.8	3265	8.1	1905	191				
12:18	3922	11.8	3213	8.0	1762	176				
12:19	3964	11.9	3196	7.9	1725	173				
12:20	3881	11.7	3159	7.8	2045	205				
12:21	3855	11.6	3258	8.1	1724	173				
12:22	3833	11.5	3284	8.1	1640	164				
12:23	3786	11.4	3320	8.2	1587	159				
12:24	3736	11.2	3393	8.4	1703	171				
12:25	3781	11.4	3417	8.5	1742	174				
12:26	3832	11.5	3385	8.4	2014	202				
12:27	3915	11.8	3304	8.2	2371	237				
12:28	3987	12.0	3201	7.9	2116	212				
12:29	4032	12.1	3129	7.7	1853	186				
12:30	4020	12.1	3071	7.6	1840	184				
12:31	4069	12.2	3094	7.7	1730	173				
12:32	4170	12.5	3022	7.5	1955	196				
12:33	4165	12.5	2923	7.2	2007	201				
12:34	4124	12.4	2922	7.2	2005	201				
12:35	4074	12.2	2964	7.3	1810	181				
12:36	3934	11.8	3074	7.6	1686	169				
12:37	4072	12.2	3177	7.9	1563	157				
12:38	4120	12.4	3031	7.5	1849	185				

Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Time	mv	) <sub>2</sub> %	mv	) <sub>2</sub> %	S( mv	<b>O₂</b> ppm	
12:39	4123	12.4	2977	7.4	1979	198	
12:40	4133	12.4	2988	7.4	2012	201	
12:41	4185	12.6	2968	7.3	2015	202	
12:42	4155	12.5	2913	7.2	2126	213	
12:43	4172	12.5	2937	7.3	1950	195	
12:44	4138	12.4	2910	7.2	1824	183	
12:45	4104	12.3	2957	7.3	1653	166	
12:46	4044	12.2	3000	7.4	1704	171	
12:47	4064	12.2	3066	7.6	1845	185	
12:48	4058	12.2	3025	7.5	2033	204	
12:49	4059	12.2	3032	7.5	2065	207	
12:50	3992	12.0	3048	7.5	2185	219	
12:51	3995	12.0	3098	7.7	1898	190	
12:52	3948	11.9	3120	7.7	1851	185	
12:53	3920	11.8	3168	7.8	1716	172	
12:54	4018	12.1	3188	7.9	1784	179	
12:55	4016	12.1	3083	7.6	1767	177	
12:56	4035	12.1	3093	7.7	2146	215	
12:57	4119	12.4	3045	7.5	2036	204	
12:58	3998	12.0	2974	7.4	2112	211	
Avgs	3958	11.9	3163	7.8	1893	190	

Number 2

Client: New Indy Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Codico: Noi i Combin								
	-	O <sub>2</sub> CO <sub>2</sub>			SC	) <sub>2</sub>		
	Time	mv	%	mv	%	mv	ppm	
		\	With NO	CGs & S	OGs			
	14:01	3839	11.5	3272	8.1	2531	253	
	14:02	3807	11.4	3265	8.1	2546	255	
	14:03	3771	11.3	3316	8.2	2586	259	
	14:04	3824	11.5	3336	8.3	2244	225	
	14:05	3869	11.6	3286	8.1	2280	228	
	14:06	3857	11.6	3237	8.0	2369	237	
	14:07	3877	11.7	3252	8.1	2484	249	
	14:08	3817	11.5	3243	8.0	2715	272	
	14:09	3876	11.6	3274	8.1	2888	289	
	14:10	3924	11.8	3230	8.0	2684	269	
	14:11	3921	11.8	3177	7.9	2684	269	
	14:12	3909	11.7	3190	7.9	2553	255	
	14:13	3937	11.8	3191	7.9	2517	252	
	14:14	3899	11.7	3186	7.9	2571	257	
	14:15	3890	11.7	3216	8.0	2628	263	
	14:16	3916	11.8	3216	8.0	2624	263	
	14:17	3953	11.9	3184	7.9	2827	283	
	14:18	3882	11.7	3161	7.8	2785	279	
	14:19	3926	11.8	3241	8.0	2595	260	
	14:20	3954	11.9	3188	7.9	2549	255	
	14:21	3913	11.8	3179	7.9	2660	266	
	14:22	3826	11.5	3223	8.0	2581	258	
	14:23	3841	11.5	3305	8.2	2659	266	
	14:24	3790	11.4	3301	8.2	2699	270	
	14:25	3718	11.2	3369	8.3	2726	273	
	14:26	3711	11.2	3451	8.5	2690	269	
	14:27	3692	11.1	3459	8.6	2695	270	
	14:28	3734	11.2	3475	8.6	2680	268	
	14:29	3804	11.4	3419	8.5	2589	259	
	14:30	3777	11.4	3364	8.3	2496	250	
	14:31	3773	11.3	3404	8.4	2606	261	
	14:32	3757	11.3	3415	8.5	2632	263	
	14:33	3727	11.2	3442	8.5	2919	292	
	14:34	3736	11.2	3444	8.5	2571	257	
	14:35	3781	11.4	3449	8.5	2658	266	
	14:36	3750	11.3	3409	8.4	2695	270	
	14:37	3754	11.3	3435	8.5	2600	260	
	14:38	3764	11.3	3425	8.5	2717	272	
	14:39	3729	11.2	3411	8.4	2657	266	
	14:40	3712	11.2	3456	8.6	2841	284	

Number 2

Calibration 1

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Project Number: 15730.001.008

Operator: **VD** 

Time	O <sub>2</sub>		CO <sub>2</sub>		SO <sub>2</sub>	
Time	mv	%	mv	%	mv	ppm
14:41	3705	11.1	3477	8.6	2668	267
14:42	3704	11.1	3502	8.7	2632	263
14:43	3614	10.9	3515	8.7	2647	265
14:44	3571	10.7	3595	8.9	2726	273
14:45	3562	10.7	3663	9.1	2741	274
14:46	3616	10.9	3663	9.1	2750	275
14:47	3573	10.7	3607	8.9	2798	280
14:48	3562	10.7	3656	9.1	2813	281
14:49	3547	10.7	3674	9.1	2724	273
14:50	3566	10.7	3677	9.1	2747	275
14:51	3524	10.6	3670	9.1	2747	275
14:52	3546	10.7	3692	9.1	2775	278
14:53	3562	10.7	3665	9.1	2816	282
14:54	3647	11.0	3638	9.0	2834	283
14:55	3675	11.0	3551	8.8	2831	283
14:56	3719	11.2	3517	8.7	2870	287
14:57	3702	11.1	3465	8.6	2874	287
14:58	3633	10.9	3502	8.7	2843	284
14:59	3574	10.7	3585	8.9	2752	275
15:00	3555	10.7	3653	9.0	2685	269
Avgs	3752	11.3	3408	8.4	2672	267

Number 3

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Source. No. 1 Combina	ition but	Jilei Calibration I					Date: 23 Juli 2021	
	Time	C	)2	CC	)2	SC	) <sub>2</sub>	
	Time	mv	%	mv	%	mv	ppm	
		\	With NO	CGs & S	OGs			
	15:42	4136	12.4	2870	7.1	3026	303	
	15:43	4071	12.2	2928	7.2	3074	307	
	15:44	4049	12.2	3004	7.4	3120	312	
	15:45	4035	12.1	3027	7.5	3280	328	
	15:46	4047	12.2	3040	7.5	3270	327	
	15:47	4051	12.2	3019	7.5	3290	329	
	15:48	4015	12.1	3040	7.5	3264	326	
	15:49	4082	12.3	3054	7.6	3137	314	
	15:50	4117	12.4	2977	7.4	3095	310	
	15:51	4104	12.3	2957	7.3	3214	321	
	15:52	4135	12.4	2964	7.3	3224	322	
	15:53	4140	12.4	2932	7.3	3344	334	
	15:54	4138	12.4	2915	7.2	3399	340	
	15:55	4106	12.3	2932	7.3	3363	336	
	15:56	4063	12.2	2994	7.4	3173	317	
	15:57	4114	12.4	3005	7.4	3187	319	
	15:58	4132	12.4	2957	7.3	3179	318	
	15:59	4110	12.3	2944	7.3	3291	329	
	16:00	4076	12.2	2962	7.3	3350	335	
	16:01	4024	12.1	2991	7.4	3535	354	
	16:02	3989	12.0	3045	7.5	3492	349	
	16:03	3964	11.9	3078	7.6	3329	333	
	16:04	3894	11.7	3119	7.7	3219	322	
	16:05	3891	11.7	3203	7.9	3140	314	
	16:06	3890	11.7	3201	7.9	3140	314	
	16:07	3924	11.8	3199	7.9	3199	320	
	16:08	3909	11.7	3164	7.8	3403	340	
	16:09	3980	12.0	3167	7.8	3447	345	
	16:10	4005	12.0	3080	7.6	3467	347	
	16:10	3861	11.6	3083	7.6	3388	339	
	16:11	3879	11.7	3229	8.0	3208	321	
	16:12	3969	11.9	3183	7.9	3121	312	
	16:13	3971	11.9	3125	7.7	3072	307	
					7.7	3222	322	
	16:15	3936 3807	11.8	3132		3439	344	
	16:16		11.4	3166	7.8			
	16:17	3780	11.4	3260	8.1	3402	340	
	16:18	3834	11.5	3267	8.1	3296	330	
	16:19	3881	11.7	3195	7.9	3290	329	
	16:20	3837	11.5	3164	7.8	3238	324	
	16:21	3863	11.6	3204	7.9	3166	317	

Number 3

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Time	$O_2$		CC		S	$O_2$
 Time	mv	%	mv	%	mv	ppm
16:22	3910	11.7	3171	7.8	3172	317
16:23	3944	11.9	3114	7.7	3336	334
16:24	3939	11.8	3081	7.6	3447	345
16:25	3907	11.7	3099	7.7	3383	338
16:26	3911	11.8	3120	7.7	3174	317
16:27	3901	11.7	3127	7.7	3171	317
16:28	3942	11.8	3118	7.7	3189	319
16:29	3912	11.8	3090	7.6	3130	313
16:30	3878	11.7	3125	7.7	3413	341
16:31	3870	11.6	3148	7.8	3486	349
16:32	3793	11.4	3185	7.9	3451	345
16:33	3776	11.3	3259	8.1	3293	329
16:34	3811	11.5	3273	8.1	3258	326
16:35	3879	11.7	3232	8.0	3214	321
16:36	3893	11.7	3160	7.8	3237	324
16:37	3862	11.6	3146	7.8	3276	328
16:38	3858	11.6	3180	7.9	3413	341
16:39	3853	11.6	3181	7.9	3370	337
16:40	3856	11.6	3182	7.9	3339	334
16:41	3808	11.4	3190	7.9	3338	334
Avgs	3955	11.9	3099	7.7	3276	328

## BIAS Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Project Number: 15730.001.008

Operator: VD

Date: 23 Jun 2021

Calibration 1

Start Time: 08:43

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

		Bi	as Resu	Its		
Standard	Cal.	Response	Bias	Difference	Error	
Gas	%	mv	%	%		tatus
Zero	0.0	4	0.0	0.0		Pass
Span	10.1	3346	10.1	0.0	0.0 F	Pass

 $CO_2$ 

Method: EPA 3A Span Conc. 20.3 %

		Bi	as Resu	Its		
Standard	Cal.	Response	Bias	Difference	Error	
Gas	%	mv	%	%	%	Status
Zero	0.0	24	0.0	0.0	0.0	Pass
Span	10.2	4072	10.1	-0.1	-0.5	Pass

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

		Bi	as Resu	Its		
Standard Gas	Cal.	Response mv	Bias ppm	Difference ppm	Error /	Status
Zero	1	80	8	7	1.5	Pass
Span	239	2334	234	-5	-1.1 🏑	Pass



Number 2

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time: 10:56

 $O_2$ 

Calibration 1

Method: EPA 3A Span Conc. 20.2 %

		Bi	as Resu	lts	
Standard	Cal.	Response	Bias	Difference	Error
Gas	%	mv	%	%	% / Status
Zero	0.0	9	0.0	0.0	0.0 / Pass
Span	10.1	3325	10.0	-0.1	-0.5 / Pass
		Cali	bration	Drift	
Standard	Initial*	Fina	al	Difference	Drift
Gas	%	mv	%	%	% / Status
Zero	0.0	9	0.0	0.0	0.0 / / Pass
Span	10.1	3325	10.0	-0.1	-0.5 Pass
-	*Bias No. 1				

CO<sub>2</sub>

Method: EPA 3A Span Conc. 20.3 %

		Bi	as Resu	Its		
Standard	Cal.	Response	Bias	Difference	Error	
Gas	%	mv	%	%	%	Status
Zero	0.0	7	0.0	0.0	0.0 🗸	Pass
Span	10.2	4076	10.1	-0.1	-0.5	Pass
		Cali	bration	Drift		
Standard	Initial*	Fina	al	Difference	Drift	
Gas	%	mv	%	%	%	Status
Zero	0.0	7	0.0	0.0	0.0 /	Pass
Span	10.1	4076	10.1	0.0	0.0 /	Pass
	*Bias No.	1			,	

Number 2

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time: 10:56

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

		Bi	as Resu	lts	
Standard Gas	Cal. ppm	Response mv	Bias ppm	Difference ppm	Error / Status
Zero	1	52	6	5	1.1 / Pass
Span	239	2334	234	-5	-1.1 / Pass

		Ca	libration	Drift		
Standard	Initial*	Fir	nal	Difference	Drift	
Gas	ppm	mv	ppm	ppm	%	/ Status
Zero	8	52	6	-2	-0.4	Pass
Span	234	2334	234	0	0.0	Pass
_	*Bias No. 1					

Number 3

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time: 13:01

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

		Bi	as Resu	lts	
Standard	Cal.	Response	Bias	Difference	Error
Gas	%	mv	%	%	% Status
Zero	0.0	9	0.0	0.0	0.0 Pass
Span	10.1	3337	10.0	-0.1	-0.5 Pass
		Cali	bration	Drift	
Standard	Initial*	Fina	al	<b>Difference</b>	Drift
Gas	%	mv	%	%	% // Status
Zero	0.0	9	0.0	0.0	0.0 / Pass
Span	10.0	3337	10.0	0.0	0.0 Pass

CO<sub>2</sub> Method: EPA 3A Span Conc. 20.3 %

		Bi	as Resu	Its		
Standard	Cal.	Response	Bias	Difference	Error	
Gas	%	mv	%	%	%	Status
Zero	0.0	17	0.0	0.0	0.0 🔧	Pass
Span	10.2	4108	10.2	0.0	0.0	Pass
		Cali	bration	Drift		
Standard	Initial*	Fina	al	Difference	Drift	
Gas	%	mv	%	%	% ,	Status
Zero	0.0	17	0.0	0.0	0.0	Pass
Span	10.1	4108	10.2	0.1	0.5 /	Pass
-	*Bias No. 2	)				

Number 3

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

1 10,000

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time: 13:01

Calibration 1

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

		Bi	as Resu	lts		
Standard Gas Zero Span	<b>Cal. ppm</b> 1 239	Response mv 23 2346	Bias ppm 3 235	Difference ppm 2 -4	% 0.4 -0.9	Status Pass Pass
Standard	Initial*	Cali Fina	bration	Drift Difference	Drift	
Gas Zero Span	ppm 6 234 *Bias No. 2	mv 23 2346	<b>ppm</b> 3 235	<b>ppm</b> -3 1	% -0.7 0.2	Status Pass Pass



Number 4

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Project Num

Project Number: **15730.001.008** 

Operator: **VD** 

Date: 23 Jun 2021

Start Time: 15:04

Calibration 1

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

		Bi	as Resu	lts		
Standard	Cal.	Response	Bias	Difference	Error	
Gas	%	mv	%	%	%	Status
Zero	0.0	9	0.0	0.0	0.0	Pass
Span	10.1	3341	10.0	-0.1	-0.5	Pass
		Cali	ibration	Drift		
Standard	Initial*	Fina	al	<b>Difference</b>	Drift	
Gas	%	mv	%	%	%	Status
Zero	0.0	9	0.0	0.0	0.0	Pass
Span	10.0	3341	10.0	0.0	0.0	Pass
-	*Bias No. 3					

CO<sub>2</sub>

Method: EPA 3A Span Conc. 20.3 %

		Bi	as Resu	lts		
Standard	Cal.	Response	Bias	Difference	Error	
Gas	%	mv	%	%	%	Status
Zero	0.0	8	0.0	0.0	0.0 🖊	Pass
Span	10.2	4109	10.2	0.0	0.0	Pass
		Cali	bration	Drift		
Standard	Initial*	Fina	al	Difference	Drift	
Gas	%	mv	%	%	%	Status
Zero	0.0	8	0.0	0.0	0.0 🗸 /	Pass
Span	10.2	4109	10.2	0.0	0.0	Pass
-	*Bias No. 3	3				

Number 4

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time: 15:04

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

		Bi	as Resu	Its		
Standard Gas Zero Span	<b>Cal. ppm</b> 1 239	Response mv 41 2322	<b>Bias ppm</b> 5 232	Difference ppm 4 -7	<b>Error</b> % 0.9 -1.5	Status Pass Pass
Standard	Initial*		bration	Drift Difference	Drift	
Gas Zero	<b>ppm</b> 3	<b>mv</b> 41	<b>ppm</b> 5	<b>ppm</b> 2	% 0.4	Status Pass
Span	235 *Bias No. 3	2322	232	-3	-0.7	Pass



Number 5

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time: 16:43

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

		Bi	as Resu	Its		
Standard	Cal.	Response	Bias	Difference	Error	
Gas	%	mv	%	%	%	Status
Zero	0.0	6	0.0	0.0	0.0 🗸 ,	Pass
Span	10.1	3335	10.0	-0.1	-0.5	Pass
		Cal	ibration	Drift		
Standard	Initial*	Fina	al	Difference	Drift	
Gas	%	mv	%	%	%	Status
Zero	0.0	6	0.0	0.0	0.0 /	Pass
Span	10.0	3335	10.0	0.0	0.0	Pass
-	*Bias No. 4	ļ				

CO<sub>2</sub>

Method: EPA 3A Span Conc. 20.3 %

		Bi	as Resu	Its		
Standard	Cal.	Response	Bias	Difference	Error	
Gas	%	mv	%	%	% /	Status
Zero	0.0	12	0.0	0.0	0.0 /	Pass
Span	10.2	4067	10.1	-0.1	-0.5	Pass
Cton doud	In:14: a1*		bration		Deiff	
Standard	Initial*	Fina		Difference	Drift	Chatus
Gas	%	mv	%	%	% /	Status
Zero	0.0	12	0.0	0.0	0.0 /	Pass
Span	10.2	4067	10.1	-0.1	-0.5	Pass
-	*Bias No. 4					



Number 5

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time: 16:43

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

		Bi	as Resu	Its		
Standard Gas Zero	Cal. ppm 1	Response mv 79	Bias ppm 8	Difference ppm 7	<b>Error</b> % / 1.5	Status Pass
Span	239	2341	234 ibration	-5 	-1.1 *	Pass
Standard	Initial*	Fina		Difference	Drift	
Gas Zero	<b>ppm</b> 5	<b>mv</b> 79	<b>ppm</b> 8	ppm 3	% 0.7	Status Pass
Span	232 *Bias No. 4	2341	234	2	0.4	Pass





### **CALIBRATION DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time: 08:37

 $O_2$ 

Method: EPA 3A

Calibration Type: Linear Regression

**Calibration Results** 

 %
 Cylinder ID
 Result, mv

 Zero
 3

 10.1
 XC013544B
 3354

 20.2
 CC275468
 6750

Curve Coefficients

**Slope** 333.3

∫ Intercept -7

**Corr. Coeff.** >0.9999

CO<sub>2</sub>

Method: EPA 3A

Calibration Type: Linear Regression

Calibration Results

 %
 Cylinder ID
 Result, mv

 Zero
 4

 10.2
 XC013544B
 4128

 20.3
 CC275468
 8145

**Curve Coefficients** 

**Slope** 401.6

Intercept 18

**Corr. Coeff.** >0.9999

# **CALIBRATION DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time: 08:37

**SO**<sub>2</sub>

Method: EPA 6C

Calibration Type: Linear Regression

С	alibration Results	
ppm	Cylinder ID	Result, mv
Zero /	-	9
242 /	CC234516	2392
458	EB0108003	4596

**Curve Coefficients** Slope

10.01

Corr. Coeff. Intercept -5 0.9999



# **CALIBRATION ERROR DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Project Number: 15730.001.008

Operator: VD

Date: 23 Jun 2021

Start Time: 08:37

Calibration 1

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

**Slope** 333.3

Intercept -6.7

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	3	0.0	0.0	0.0	Pass
10.1	3354	10.1	0.0	0.0	Pass
20.2	6750	20.3	0.1	0.5	Pass

CO<sub>2</sub>

Method: EPA 3A Span Conc. 20.3 %

**Slope** 401.6

Intercept 18.5

Standard % Zero	Response mv 4	<b>Result</b> % 0.0	Difference % 0.0	Error % 0.0 /	<b>Status</b> Pass
10.2	4128	10.2	0.0	0.0 /	Pass
20.3	8145	20.2	-0.1		Pass

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

**Slope** 10.01

Intercept -5

Standard ppm Zero 242 458	Response mv 9 2392 4596	Result ppm 1 239 459	Difference ppm 1 -3 1	Error % / 0.2 / -0.7 / 0.2 /	Status Pass Pass Pass
---------------------------------------	-------------------------------------	----------------------------------	-----------------------------------	--	--------------------------------

### **METHODS AND ANALYZERS**

Client: New Indy Project Number: 15730.001.008

Location: Catawba, SC Operator: VD

Source: No. 1 Combination Boiler Date: 23 Jun 2021

File: K:\15730 New Indy\001 Catawba SC\008\Data\210623 New Indy Catawba No. 1 CBb.cem

Program Version: 2.2, built 3 Jul 2020 File Version: 2.04
Computer: WSAUBCHEMLABGC1 Trailer: 281
Analog Input Device: Keithley KUSB-3108

#### Channel 1

Analyte
Method
Analyzer Make, Model & Serial No.
Full-Scale Output, mv
Analyzer Range, %
Span Concentration, %

O2
EPA 3A, Using Bias
Teledyne T802 s/n: 172
10000
25.0
20.2

#### Channel 2

Analyte CO2
Method EPA 3A, Using Bias
Analyzer Make, Model & Serial No.
Full-Scale Output, mv 10000
Analyzer Range, % 25.0
Span Concentration, % 20.3

#### **Channel 5**

Analyte
Method
Analyzer Make, Model & Serial No.
Full-Scale Output, mv
Analyzer Range, ppm
Span Concentration, ppm

SO2
EPA 6C, Using Bias
Teledyne T100H SN 374
10000
500
500
458





# No. 1 Combination Boiler (Condition 2: NCG Gases Only)

New Indy Catawba, SC 15730.001.008 No. 1 Combination Boiler Condition 2: NCGs only

### **EMISSION CALCULATIONS**

Date Time Began Time Endec			Run 1 6/23/21 1824 1924	Run 2 6/23/21 2019 2119	Run 3 6/23/21 2202 2302	Mean
Volumetric : BWS % Oxygen Recovery, %	Flow Rate, (Qs), DSCFM		1.30E+05 0.164 11.4 91.7	1.31E+05 0.163 11.9 91.7	1.30E+05 0.171 11.6 91.7	0.166 11.6 91.7
Sulfur Diox	cide Concentration, ppm Emission Rate, lb/hr	MW= 64.06	313.0 404.4	348.0 452.9	349.0 450.8	336.7 436.1
Total Redu	ced Sulfur (TR Concentration, ppm Emission Rate, lb/hr	2S MW)= 34.08	0.97 0.67	0.98	0.99 0.68	0.98 0.68
H2S	(H2 Concentration, ppm Concentration, ppm (Correc Emission Rate, lb/hr	2S MW)= 34.08 eted for Recovery)	0.07 0.08 0.05	0.07	0.07 0.08 0.05	0.07 0.08 0.05

New Indy Catawba, SC

15730.001.008

No. 1 Combination Boiler

			Condit	ion 2: NC	Gs only
	ISOKINETIC CALC	CULATIONS			
Run Number		1	2	3	Mean
Date		6/23/21 🗸	6/23/21	6/23/21	
Time Began		1824	2019	2202	
Time Ended		1951	2145	2325	
	INPUT DA	TA			
Sampling Time, min	(Theta)	64.0	64 🗸	64	64
Stack Diameter, in.	(Dia.)	120.00 🗸	120.00 🗸	120.00	120.00
Barometric Pressure, in. Hg	(Pb)	29.45 🗸	29.45 🗸	29.45	29.45
Static Pressure, in. H2O	(Pg)	-0.65	-0.65 🗸	-0.65	-0.65
Pitot Tube Coefficient	(Cp)	0.84	0.84 🗸	0.84	0.84
Meter Correction Factor	(Y)	0.9880 🇸	0.9880	0.9880	0.9880
Orifice Calibration Value	(Delta H@)	1.7320 🗸	1.7320	1.7320	1.7320
Nozzle Diameter, in.	(Dn)	0.250 🗸	0.250	0.250	0.250
Meter Volume, ft^3	(Vm)	42.643	42.125	41.764	42.177
Meter Temperature, °F	(Tm)	94.1	85.2	77.6	85.6
Meter Temperature, °R	(Tm-R)	554.1	545.2	537.6	545.6
Meter Orifice Pressure, in. H2O	(Delta H)	1.300 🗸	1.300 🗸	1.300	1.300
Ave Sq Rt Orifice Press, (in. H2O)^1/2	((Delta H)½)avg)	1.140 🗸	1.140	1.140 🗸	1.140
Volume H2O Collected, mL	(Vlc)	165.5	165.0	175.8	168.8
CO2 Concentration, %	(CO2)	8.3 🗸	7.8	8.1 🗸	8.1
O2 Concentration, %	(O2)	11.4	11.9	11.6	11.6
Ave Sq Rt Velo Head, (in. H2O) <sup>1</sup> / <sub>2</sub>	((Delta P)½)avg)	0.748 🗸	0.750 🗸	0.753	0.750
Stack Temperature, °F	(Ts)	415.7	411.3 🗸	415.1	414.0
Stack Temperature, °R	(Ts-R)	875.7	871.3	875.1	874.0
	CALCULATED	DATA			
Nozzle Area, ft <sup>2</sup>	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft <sup>2</sup>	(As)	78.54 V	78.54	78.54	78.54
Stack Pressure, in. Hg	(Ps)	29.40	29.40	29.40	29.40
Meter Pressure, in. Hg	(Pm)	29.55	29.55	29.55	29.55
Standard Meter Volume, ft <sup>3</sup>	(Vmstd)	39.631	39.788	40.006	39.808
Standard Water Volume, ft <sup>3</sup>	(Vinsta)	7.790	7.767		
Moisture Fraction (Measured)	(BWS)	0.164	0.163	8.275	7.944
Moisture Fraction (lower sat/meas)	(BWS)	0.164		0.171	0.166
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)		0.163	0.171	0.166
Mol. Wt. of Stack Gas, lb/lb-mole	(Ma) (Ms)	29.78	29.72	29.76	29.76
Average Stack Gas Velocity, ft/sec	(Vs)	27.85 55.53	27.81	27.74	27.80
Stack Gas Flow, actual, ft <sup>3</sup> /min		55.53	55.61	55.97	55.70
	(Qa)	261702	262033	263755	262497
Stack Gas Flow, Std , ft <sup>3</sup> /min	(Qs)	129539	130503	129526	129856
Calibration check	(Yqa)	0.9922	0.9973	0.9983	0.996
Percent difference from V					0.000/

0.80%

Percent difference from Y

					al con			K.		701			THE							Sin In	1	5730.001.008
	NA Initial Final Soo Soo Soo Soo Soo Soo Soo Soo Soo So	COMMENTS											3.00	4			N. C.	1		Os, dscfm Sokinetic	Calculated by Calculated Calculat	per Machine, , & #1-2 CBs ssion Report
Page 1 of 1	tor N	SAMPLE TRAIN VACUUM (in Hg)	8	8	8	3	2,5	2,5	2,5	2,5	2.5	3,5	2,5	2,5	2,5	2,5	2.5	13	Max Vac			
	K Fa	IMPINGER EXIT TEMP (°F)	90	63	63	19	64	62	63	h9	66	65	99	65	49	63	64	64	Max Temp	Thermocouple Check Meter Temp., °F	Ref. Temp, °F Result	
	Filter II	FILTER EXIT TEMP (°F)																/	Min/Max	The	Ž.	
	16 H2 16 H2	FILTER BOX TEMP (°F)	250	25.2	255	254	250	251	252	251	256	251	250	252	255	386	353	756	350/257	yrite M3A		
	n 15 n 24 a 78 a 78 Points	PROBE TEMP (°F)	237	238	238	238	237	238	239	240	235	256	235	236	238	239	239	240	35/246	O <sub>2</sub> /CO <sub>2</sub> by Orsat Fyrite M3A Leak Check, Pre-run	Post-run	
Moisture	Ambient Temp. Baro. Pressure* Static Pressure Impinger Gain Silica Gel Gain Stack Area	DGM OUTET TEMP (°F)	95	95	95	53	98	93	93	95	hb	66	hb	94	42	45	16	911	30 hb	O <sub>2</sub> /CO <sub>2</sub> Leak Che		
4,	ii. 280	DGN' INMET TEMP (°F)					0											\	GR TAN AVG	ion 'Ill		
Method: EPA	010 488 1.739 35 55 600 8400 8600 8600	STACK TEMP (°F)	917	91/2	4115	415	416	917	SIh	SIL	514	211/2	2115	514	111/2	7 416	916	3/414	415	Flue Gas Composition Oxvoen. %	Carbon Dioxide, %	
Meth	PRSF - 256	DRY GAS METER READING (ft³) 967.500	470.1	472.8	475,5	1.81	9118	443,4	1.98%	8.385	491.5	प्यता ।	997.3	499.5	1002,3	1604.	1,007.4	1616.193	Total Volume	Flue Gas Co	Carbon Diox Moisture, %	
	Console ID Meter Corr., Y Console AH@ Probe ID/Length Liner Material Pitot ID/Coeff. Thermo ID Nozzle ID/Diams. Avg. Nozzle Diam.	ā	9	3	6	9	9 4	- 1	5	5	n	5	2	0				2	Avg AH	Avg VAH	Chile	4
		ORIFICE PRESSURE AH (in: H <sub>2</sub> O)	1.3		1.3	2113	1,3			211	, ,	1,3	-	2'1	13	5.1	2	-	100		NCE O	
	ation Boile	VELOCITY PRESSURE Ap (in. H <sub>2</sub> O)	.59	09:	5	43.86	. 55	ph'	5113	1,	,76	69	85	940	74	.12	16	.55	C PC	19595	Comments	
Data	New Indy Catawba, SC 1 Combination Boiler 572CK CW+1e-t 15730.001.008 1 6/23/21 KK/LC	CLOCK TIME (plant time)				01/81	19146			9:03	19.08		я я	19:24	14:35			19:51	port elevation	5		
<b>Isokinetic Field</b>	Client n/Plant Source No. ocation Vumber Number Tsonnel		4	80	12	16	20	24	28	32	36	40	44	48	52	56	09	64	*Barometric Pressure is at port elevation		Solutions,	
skineti	Client Location/Plant Source Sample Location W. O. Number Run Number Date Test Personnel Sample Time	TRAVERSE SAMPLE TIME POINT (min) NO.	A-1 R	2	8	4	Ø-1 A	2	6	4	Q-1-D	2	8	4	D-1 C	2	8	4	*Barometri	FIM		9
18	<b>(7)</b>	TT																				417

	Final S	huo	COMMENTS																		V <sub>m-std</sub> , scf		#3 Paper I SIM Vs., & a Crajssio	0.001,008 Machine, #1-2 CBs n Report
Page 1 of 1	Leak Checks Initial	NA NCG	SAMPLE TRAIN VACUUM	(gr m)	8	2	7	8	8	8	8	8	7	8	8	0	2	2	2	R	Max Vac Vm	Check Qs, dscfm % Isokinetic Calculated by		
	K Factor Leal Volume, ft³ @ Vac. in. Hg Pitot	R	IMPINGER EXIT TEMP (°F)	Y	65	64	19	56	25	55	56	56	62	56	28	59	56	00	99	19	Max Temp	Thermocouple Check Meter Temp., °F Ref. Temp, °F	Result	
	B03 8	Filter ID Sample ID	FILTER EXIT TEMP (°F)																	/	Min/Max	Me Me		
	9. F 165 in. Hg 165 in. H20 ml 168 in. H20 168 in. H20 168 in. H20	16	FILTER BOX TEMP (°F)		252	251	256	255	254	255	256	255	256	255	253	754	255	254	255	126	Min/Max 253/251	rite M3A		
	29,29,29,29,29,29,29,29,29,29,29,29,29,2	e Points	PROBE TEMP (°F)		236	232	238	234	238	239	239	Oho	236	235	356	235	236	235	235	236	235/240	by Orsat Fyrite M3A eck, Pre-run Post-run		
Method: EPA 4, Moisture	Ambient Temp. Baro. Pressure* Static Pressure Impinger Gain Silica Gel Gain	6 , 35ら Total Traverse	DGM OUTET TEMP (°F)		38	hs	88	88	18	18	86	98	98	78	94	83	18	18	18	81/	Avg Tm	SET Y	1 1	
A 4, M	489	, 25 <i>6</i> in. To	DGN INLET TEMP (°F)																	`	>	uo	T	
od: EP	610 684 733 5 5 5 5 684	.950	STACK TEMP (°F)		415	1116	95	915	-413	413	116	016	21/	412	413	014	dil	11/5	214	A16	Avg T <sub>s</sub>	Compositi	%	
Metho		ams. <u>1256</u> Jiam 2	DRY GAS METER READING (ft³)	10,466	13.0	15,9	19,4	21.2	3,32,4 All	36,6	200	31.5	34.3	36,9	39,5	42,6	1'5h	47,5	49.0	52.525	Total Volume	Flue Gas Composition Oxygen, % Carbon Dioxide %	Moisture, %	
	Console ID Meter Corr., Y Console AH@ Probe ID/Length Liner Material Pitot ID/Coeff. Thermo ID	Nozzle ID/Diams. Avg. Nozzle Diam.	ORIFICE PRESSURE AH	(in. H <sub>2</sub> O)	1.3	1.3	(3	1,3	1.3 2	13	1.3	1,3	1,3	1,3	1.3	1.3	1.3	5.1	1,3	1,3	HA BVA	AND VAH		
	Catawba, SC 1 Combination Boiler  15730.001.008 2 2 6/23/21	//c min.	VELOCITY PRESSURE	(m. H <sub>2</sub> O)	, 58	,5a	09'	200	151	.50	Sh.	35.	17.	80	37.	,34	.75	-	11	53	Avg VAP	M. 56828		
d Data	Catawba, SC 5. 1 Combination E 5. 4 uv/k swtl* 15730.001.008	4 4 .	CLOCK TIME (plant time)	がな	20:19			20.35	北京			20,57	21:02			21:18	21:29		54:12	STAB	*Barometric Pressure at port elevation	Š		
ic Fiel	Client N/Plant Source No. ocation Vumber Date	sonnel Time	SAMPLE TIME (min)	O KIN	4	80	12	16	* 290'4	24	28	32	36	40	44	48	52	56	09	64	ric Pressure		d Air Services	
<b>Isokinetic Field</b>	Client Location/Plant Source Sample Location W. O. Number Run Number	Test Personnel Sample Time	TRAVERSE SA POINT NO.		A-1 B	2	က	4	W-1 X	2	8	4	012	2	က	.4	0-1	2	ю	4	*Barometr	W.F.	Integrated Air Services	418

			7		S																			Pulp D	ver, #3 Pap	730.001.008 er Machine, & #1-2 CBs sion Report
			000	NCGONLY	COMMENTS																	1	V <sub>m-std</sub> , scf	Qs, dscfm % Isokinetic	ated by	
Page 1 of 1	ictor NA	Z Z	8000	NK un 3 NCG	SAMPLE TRAIN VACUUM	(in Hg)	8	8	8	N	8	N	n	8	n	8	2	8	8	8	7	7	Max Vac	%	Calculated by	
ď	K Factor	H <sup>3</sup>	@ Vac., in. Hg Pitot	N N	IMPINGER	(*)	62	59	57	57	64	38	58	N 00	63	b5	54	55	00	22	56	5.6	Max Temp 64	Thermocouple Check Meter Temp., °F	Ref. Temp, °F	
		00		Filter ID Sample ID	FILTER	TEMP ('F)																~	Min/Max	Ther	Re	
	45 in. Hg	4   B	4 ft <sup>2</sup>	16	FILTER BOX	TEMP (°F.)	255	253	253	254	253	252	253	253	952	255	254	255	256	255	256	255	Min/Max 252/256	ite M3A		
	np. 15	ain 166	ea 78.54	e Points	PROBE TEMP (°F)		252	734	235	235	236	237	239	246	240	237	238	239	240	242	240	239	Solute Solute	by Orsat Fyrite M3A sck, Pre-run	Post-run	
Moisture	Ambient Temp. Baro. Pressure*	Impinger Gain Silica Gel Gain	Stack Area			TEMP (*F)	78 2	28	82	28	79		28	77	77	82	181	78	11	11	76	76.1	77.56 2	O <sub>2</sub> /CO <sub>2</sub> by Orsat F Leak Check, Pre-run		
4				1350 in. Total		TEMP (°F)																	NA C			
Method: EPA	458 458	1.734	A010 A010	250	STACK	(,E)	21/2	91/2	514	117	SIL	514	911)	21/2	2115	8117	417	416	914	5112	hlh	7115	Avg Ts	Flue Gas Composition (I)	ioxide, %	
Metho		PRSB	f. 6172	,250	DRY GAS METER READING (ft.)	52.900	55,5	1.85	60,6	63.3	65.8	68.3	11,17	13,7	76,2	0'6	81.6	1 '68	198	89,3	92.0	94.564	Total Volume	Oxygen. %	Carbon Dioxide, %	
	Console ID	Console △H@ Probe ID/Length Liner Material	Pitot ID/Coeff. Thermo ID	Nozzle ID/Diams. Avg. Nozzle Diam.	ORIFICE DR PRESSURE R	(0)		n	3	3	3	2	v.	1,1	5	2.	2	2	3	.3	2	3 5	NH NH	Avg VAHC		
	1 1.		iā.	Nozzi Avg. N		ē				5 10	=	) (			2		~	1		-	_				ACG GNLY	
	ndy a, SC	owter 01.008	3 3/2	L min.	VELOCITY PRESSURE	(in. H <sub>2</sub> 0)	.60	19.	,54	36'	157	,50	2h"	120	1	10	Sh.	113	17	10	68	.57	- 15 2 45	.57189		
Data	New Indy Catawba, S	Stauth o which 15730.001.008	6/8	4	CLOCK TIME (plant time)	22:08				27:18	22:25			11:78	22:41			23:03	23:09			23:25	port elevation	5	Comments	
c Field	Client /Plant	source No.	mber Date		SAMPLE TIME (min)	0	4	8	12	16	20	24	28	32	36	40	44	48	52	56	09	64	*Barometric Pressure is at port elevation		Solutions, Air Services	
<b>Isokinetic Field</b>	Client Location/Plant	Sample Location W. O. Number	Run Number Date	Test Personnel Sample Time	RSE T	NO.	A-1 B	2	8	4	Ø-1 Å	2	n	4	d1 p	2	8	4	Ø-1 €	CI	8	4	*Barometric	NEW.	Integrated Air Services	)
180		S			TR	e e e e	74.																			419

# Sample Recovery Field Data

Method: EPA 4, Moisture

Location/	Client	New Indy Catawba, SC		W.C	Source No. 1 C	Combination Boiler 5730.001.008
		Impir	ngers 1 - 3 measure	ements in grams		
Run No.	1		Sample Date	6/23/21	F ecovery Da	ate 6/23/21
Sample ID	Run 21	NC6 only	Filter ID	IVA	Analy	st At R
			lm	pingers		
Contents	1	2	3		Imp.Tot	tal Silica Gel Total grams
Final	061	71127	(113			942,4
Initial	840.1	745.3	651.3			933.1
	679.8	725.0	646.7		(0)	
Gain	131.3	20.3	1.61		156,	
Imp	oinger Color	clear			Labled?	
Silica G	el Condition	Used			Sealed?	
				(10315		(122121
Run No.	2			6/23/21		ate $\frac{6/23/21}{6}$
Sample ID	Ryn 2 NC	6 only		NA	Anal	yst ATR
				npingers	Imp.To	tal Silica Gel Total
Contents	1	2	3		Imp.ro	grams Total
Final	898.4	751.2	639,3			897,6
Initial	770	730,7	635.2			1885.61
Gain	128.41	20.51	4.1 /	100	153	
Im	oinger Color	Clear			Labled?	
Silica G	el Condition	used			Sealed?	
Run No.	3		Sample Date	6/23/21	Recovery Da	ate 6/23/2/
Sample ID	Ryn3 N	(Gonly	Filter ID	NA	Anal	yst ATR
				npingers		
Contents	1 1 1 1 1	2	3		Imp.To	tal Silica Gel Total grams
Final 1	21(1)	761.2	655.2			, 891.8
Initial	600	7453	651.3			882.6
Gain	146,2	15,9	3,9		1//	918, 175.8
			J, (V		Lablada I	
	pinger Color	Wear			Labled?	,
Silica G	sel Condition	uzec (			Sealed?	
		Ch	eck COC for Sample ID	Os of Media Blanks		





# **RUN SUMMARY**

Number 4

Client: New Indy

Location: Catawba, NC

Source: #1 Combination Boiler

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 23 Jun 2021

Start Time 18:24 End Time 19:24

Average Measured TRS Conc. Recovery No. 3 TRS Corrected for Recovery 0.58 ppm 91.7 % 0.63 ppm

0.85

612g



# **RUN SUMMARY**

Number 5

Client: New Indy

Location: Catawba, NC

Source: #1 Combination Boiler

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

Date: 23 Jun 2021

Start Time 20:19

**End Time 21:19** 

**Average Measured TRS Conc.** Recovery No. 3 **TRS Corrected for Recovery** 

0.90 0<del>.55</del> ppm 91.7 %

0.00 ppm 049

# **RUN SUMMARY**

Number 6

Client: New Indy

Location: Catawba, NC

Source: #1 Combination Boiler

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

Date: 23 Jun 2021

Start Time 22:02

**End Time** 23:02

Average Measured TRS Conc. Recovery No. 3

TRS Corrected for Recovery

0.91 0.61 ppm 91.7 % 0,67 ppm

(

RB J

Number 4

			- KS	ppm	0.89	0.87	0.88	98.0	0.92	0.87	0.87	0.88	0.87	0.94	0.88	0.88	0.91	0.90	0.91	0.30	0.90	0.89	0.91	0.91	0.89
800.1	3	1.7		<b>v</b>	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071		0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071		0.071	
15730.001.008	VD	23 Jun 2021	DMDS	mdd										0.10									0.08		
lumber:	Operator:	Date.		area	<2	<b>~</b>	<b>~</b>	<b>~</b>	7	7	<b>~</b>	<b>~</b>	<b>~</b>	4	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	<2	<b>~</b>	7	<b>~</b>	2	<2	
Project Number:	ō			v	0.16	0.16	0.16	0.16		0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16		0.16	0.16	0.16	0.16	0.16	
			CIMS	ppm					0.21										0.18						
				area	<2	<b>~</b>	<b>~</b>	<2	က	<b>~</b>	<b>~</b>	<2	<2	<b>~</b>	<b>~</b>	<2	<b>~</b>	<b>~</b>	7	<2	<2	<2	<2	<2	
	Method: 16	Calibration.		<b>v</b>																					
	Ž	S	MeSH	ppm	0.52	0.50	0.51	0.49	0.50	0.51	0.51	0.52	0.50	0.52	0.52	0.52	0.53	0.54	0.53	0.53	0.53	0.53	0.53	0.54	
				area	34	32	32	31	31	32	32	33	32	34	33	34	36	36	34	35	35	35	35	36	
					0.07	90.0	90.0	90.0	0.07	90.0	90.0	90.0	90.0	90.0	90.0	90.0	0.07	90.0	90.0	0.07	90.0	90.0	0.07	0.07	0.07
		soller	'n	v		0.064	0.064	0.064		0.064	0.064	0.064	0.064	0.064	0.064	0.064		0.064			0.064	0.064			
>	ı, NC	#1 Combination Boller	H <sub>2</sub> V	mdd	0.07				0.07								0.07		90.0	0.07			0.07	0.07	
New Indy	Catawba, NC	#1 Com		area	က	7	7	<b>~</b>	က	<b>~</b>	<b>%</b>	<b>~</b>	<b>~</b>	7	7	7	2	7	7	က	<b>%</b>	7	2	2	
Client:	Location:	Source:		Time	18:24	18:27	18:30	18:33	18:36	18:39	18:42	18:45	18:48	18:51	18:54	18:57	19:00	19:03	19:06	19:09	19:12	19:15	19:18	19:21	Averages

Number 5

			TRS	mdd	0.87	0.85	0.86	0.88	0.88	0.87	0.87	0.88	0.88	1.08	0.89	0.87	0.91	0.88	0.90	0.89	0.90	0.91	0.93	0.90	0.90
1.008		021		v	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071		0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	
15730.001.008	ΛD	23 Jun 2021	DMDS	mdd										0.13											
Project Number:	Operator:	Date:		area	<2	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	<2	<b>~</b>	<b>~</b>	<b>~</b>	9	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	7	<b>~</b>	<2	<b>%</b>	<2	
Project	O			V	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16		0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
			DMS	mdd										0.24										3	
	9	1		area	<2	<2	<b>~</b>	<b>~</b>	<2	<2	<2	<b>~</b>	<2	4	<2	<2	<2	<2	<2	7	<2	<2	<b>~</b>	<2	
	Method: 16	Calibration:		V																					
	2	Ö	MeSH	mdd	0.51	0.48	0.50	0.51	0.52	0.51	0.50	0.51	0.52	0.51	0.52	0.50	0.53	0.52	0.53	0.52	0.54	0.54	0.56	0.52	
				area	32	29	31	33	33	32	32	33	33	33	34	32	35	34	35	34	36	37	39	34	
					90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	0.08	90.0	90.0	90.0	90.0	90.0	90.0	0.08	0.07
		3oiler	S	V		0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064		0.064	0.064	0.064	0.064	0.064	0.064		
>	a, NC	#1 Combination Boiler	H <sub>2</sub> S	mdd	90.0												0.08							0.08	
New Indy	Catawba, NC	#1 Com		area	2	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	<2	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	က	<b>~</b>	<b>%</b>	7	7	<b>%</b>	7	3	
Client:	Location:	Source:		Time	20:19	20:22	20:25	20:28	20:31	20:34	20:37	20:40	20:43	20:46	20:49	20:52	20:55	20:58	21:01	21:04	21:07	21:10	21:13	21:16	Averages

Number 6

			TRS	mdd	0.86	0.88	0.87	0.87	0.88	0.89	0.89	0.91	1.02	0.88	0.89	06.0	06.0	0.92	0.94	0.93	0.94	0.94	0.91	0.91	0.91
1.008		021		V	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071		0.071	0.071			0.071	0.071	
15730.001.008	ΛD	23 Jun 2021	DMDS	mdd														0.08			0.07	0.09			
Project Number:	Operator:	Date:		area	<2	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	7	<b>~</b>	7	<b>~</b>	<b>~</b>	7	<b>%</b>	<b>%</b>	7	<b>~</b>	<b>%</b>	2	က	<b>~</b>	<b>~</b>	
Project I	O			<b>v</b>	0.16	0.16	0.16	0.16	0.16	0.16	0.16			0.16	0.16	0.16	0.16	0.16				0.16	0.16	0.16	
			DMS	ppm								0.17	0.28						0.19	0.19	0.20				
	9	1		area	<2	<b>~</b>	<b>%</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	7	2	<2	<b>~</b>	<b>%</b>	<b>~</b>	<b>~</b>	က	က	က	<b>~</b>	<b>~</b>	<2	
	Method: 16	Calibration:		v																					
	2	Ö	MeSH	mdd	0.49	0.52	0.51	0.50	0.51	0.52	0.52	0.54	0.53	0.52	0.52	0.53	0.53	0.53	0.54	0.53	0.54	0.54	0.54	0.55	
				area	31	33	32	31	33	34	34	36	35	33	34	35	35	35	36	36	36	36	37	37	
					90.0	90.0	90.0	90.0	0.07	90.0	90.0	90.0	90.0	90.0	90.0	90.0	0.07	0.07	0.07	90.0	90.0	90.0	90.0	90.0	0.07
		3oiler	S.	V	0.064	0.064	0.064	0.064		0.064	0.064	0.064	0.064	0.064	0.064	0.064				0.064	0.064	0.064	0.064	0.064	
>	a, NC	#1 Combination Boiler	H <sub>2</sub> S	mdd					0.02								0.07	0.07	0.07						
New Indy	Catawba, NC	#1 Com		area	<2	7	<b>%</b>	7	7	<b>%</b>	?	<b>%</b>	7	<b>%</b>	7	<b>%</b>	က	2	7	\$	<b>%</b>	<b>%</b>	7	<2	
Client:	Location:	Source:		Time	22:02	22:05	22:08	22:11	22:14	22:17	22:20	22:23	22:26	22:29	22:32	22:35	22:38	22:41	22:44	22:47	22:50	22:53	22:56	22:59	Averages

Number 4

Client: New Indy Location: Catawba, NC

Source: #1 Combination Boiler

Method 16 Calibration 1

Project Number: **15730.001.008**Operator: **VD** 

 Time	Time H <sub>2</sub> S area ppm		Me	SH	DI	MS	DN	<b>MDS</b>	TRS
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
18:24	3	0.07	34	0.52	<2	<0.16	<2	<0.071	0.59
18:27	<2	< 0.064	32	0.50	<2	< 0.16	<2	< 0.071	0.50
18:30	<2	< 0.064	32	0.51	<2	< 0.16	<2	< 0.071	0.51
18:33	<2	< 0.064	31	0.49	<2	< 0.16	<2	< 0.071	0.49
18:36	3	0.07	31	0.50	3	0.21	<2	< 0.071	0.78
18:39	<2	< 0.064	32	0.51	<2	< 0.16	<2	< 0.071	0.51
18:42	<2	< 0.064	32	0.51	<2	< 0.16	<2	< 0.071	0.51
18:45	<2	< 0.064	33	0.52	<2	< 0.16	<2	< 0.071	0.52
18:48	<2	< 0.064	32	0.50	<2	< 0.16	<2	< 0.071	0.50
18:51	<2	< 0.064	34	0.52	<2	< 0.16	4	0.10	0.72
18:54	<2	< 0.064	33	0.52	<2	< 0.16	<2	< 0.071	0.52
18:57	<2	< 0.064	34	0.52	<2	< 0.16	<2	< 0.071	0.52
19:00	2	0.07	36	0.53	<2	< 0.16	<2	< 0.071	0.60
19:03	<2	< 0.064	36	0.54	<2	< 0.16	<2	< 0.071	0.54
19:06	2	0.06	34	0.53	2	0.18	<2	< 0.071	0.77
19:09	3	0.07	35	0.53	<2	< 0.16	<2	< 0.071	0.60
19:12	<2	< 0.064	35	0.53	<2	< 0.16	<2	< 0.071	0.53
19:15	<2	< 0.064	35	0.53	<2	< 0.16	<2	< 0.071	0.53
19:18	2	0.07	35	0.53	<2	< 0.16	2	0.08	0.75
19:21	2	0.07	36	0.54	<2	<0.16	<2	<0.071	0.61
Average		<0.064		0.52		<0.16		<0.071	0.58 /



Number 5

Method 16

Client: New Indy
Location: Catawba, NC
Source: #1 Combination Boiler Calibration 1 Project Number: **15730.001.008**Operator: **VD** 

Time	F area	I <sub>2</sub> S ppm	Me area	SH ppm	Di area	MS ppm	DN area	/IDS ppm	TRS ppm
20:19	2	0.06	32	0.51	<2	<0.16	<2	<0.071	0.57
20:22	<2	< 0.064	29	0.48	<2	< 0.16	<2	< 0.071	0.48
20:25	<2	< 0.064	31	0.50	<2	< 0.16	<2	< 0.071	0.50
20:28	<2	< 0.064	33	0.51	<2	< 0.16	<2	< 0.071	0.51
20:31	<2	< 0.064	33	0.52	<2	< 0.16	<2	< 0.071	0.52
20:34	<2	< 0.064	32	0.51	<2	< 0.16	<2	< 0.071	0.51
20:37	<2	< 0.064	32	0.50	<2	< 0.16	<2	< 0.071	0.50
20:40	<2	< 0.064	33	0.51	<2	< 0.16	<2	< 0.071	0.51
20:43	<2	< 0.064	33	0.52	<2	< 0.16	<2	< 0.071	0.52
20:46	<2	< 0.064	33	0.51	4	0.24	6	0.13	1.01
20:49	<2	< 0.064	34	0.52	<2	< 0.16	<2	< 0.071	0.52
20:52	<2	< 0.064	32	0.50	<2	< 0.16	<2	< 0.071	0.50
20:55	3	0.08	35	0.53	<2	< 0.16	<2	< 0.071	0.61
20:58	<2	< 0.064	34	0.52	<2	< 0.16	<2	< 0.071	0.52
21:01	<2	< 0.064	35	0.53	<2	< 0.16	<2	< 0.071	0.53
21:04	<2	< 0.064	34	0.52	<2	< 0.16	<2	< 0.071	0.52
21:07	<2	< 0.064	36	0.54	<2	< 0.16	<2	< 0.071	0.54
21:10	<2	< 0.064	37	0.54	<2	< 0.16	<2	< 0.071	0.54
21:13	<2	< 0.064	39	0.56	<2	< 0.16	<2	< 0.071	0.56
21:16	3	0.08	34	0.52	<2	<0.16	<2	< 0.071	0.60
Average		<0.064		0.52		<0.16		<0.071	0.55 /



Number 6

Client: New Indy Location: Catawba, NC

Source: #1 Combination Boiler

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

Time		I <sub>2</sub> S		SH		MS		MDS	TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
22:02	<2	< 0.064	31	0.49	<2	<0.16	<2	< 0.071	0.49
22:05	<2	< 0.064	33	0.52	<2	< 0.16	<2	< 0.071	0.52
22:08	<2	< 0.064	32	0.51	<2	< 0.16	<2	< 0.071	0.51
22:11	<2	< 0.064	31	0.50	<2	< 0.16	<2	< 0.071	0.50
22:14	2	0.07	33	0.51	<2	< 0.16	<2	< 0.071	0.58
22:17	<2	< 0.064	34	0.52	<2	< 0.16	<2	< 0.071	0.52
22:20	<2	< 0.064	34	0.52	<2	< 0.16	<2	< 0.071	0.52
22:23	<2	< 0.064	36	0.54	2	0.17	<2	< 0.071	0.71
22:26	<2	< 0.064	35	0.53	5	0.28	<2	< 0.071	0.81
22:29	<2	< 0.064	33	0.52	<2	< 0.16	<2	< 0.071	0.52
22:32	<2	< 0.064	34	0.52	<2	< 0.16	<2	< 0.071	0.52
22:35	<2	< 0.064	35	0.53	<2	< 0.16	<2	< 0.071	0.53
22:38	3	0.07	35	0.53	<2	< 0.16	<2	< 0.071	0.60
22:41	2	0.07	35	0.53	<2	< 0.16	2	0.08	0.76
22:44	2	0.07	36	0.54	3	0.19	<2	< 0.071	0.80
22:47	<2	< 0.064	36	0.53	3	0.19	<2	< 0.071	0.72
22:50	<2	< 0.064	36	0.54	3	0.20	2	0.07	0.88
22:53	<2	< 0.064	36	0.54	<2	< 0.16	3	0.09	0.72
22:56	<2	< 0.064	37	0.54	<2	< 0.16	<2	< 0.071	0.54
22:59	<2	<0.064	37	0.55	<2	<0.16	<2	<0.071	0.55
Average	9	<0.064		0.53		<0.16		<0.071	0.61 🗸





Number 7

Client: New Indy

Location: Catawba, NC

Source: #1 Combination Boiler

Method 16 Calibration 2 Project Number: 15730.001.008
Operator: VD

Time	H:	H₂S		MeSH		DMS		DMDS	
1111111	area	ppm	area	ppm	area	ppm	area	ppm	ppm
			C	C416806 7	7.257 pp	m			
12:28	14344	7.79	<2	< 0.12	<2	< 0.077	<2	< 0.036	7.79
12:31	14847	7.94	<2	< 0.12	<2	< 0.077	<2	< 0.036	7.94
12:34	15003	7.98	<2	<0.12	2	0.09	<2	< 0.036	8.07
Averag		7.90		<0.12		<0.077		<0.036	7.93

# RECOVERY DATA

Number 1

Client: New Indy

Location: Catawba, NC

Source: #1 Combination Boiler

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Before Run 1

Start Time 08:30 **End Time** 08:43

Recovery Gas to Probe, Time 08:30

Peak Areas, mv-sec

11433

11272

11506

ppm Average

11403 / 7.65

Recovery Gas to GC, Time 08:40

Peak Areas, mv-sec

13047

13101

Average / 13098

ppm 8.26

Recovery 92.6%

13148

# **RECOVERY DATA**

Number 2

Client: New Indy

Location: Catawba, NC

Source: #1 Combination Boiler

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

After Run 3 Before Run 4 Start Time 16:45 **End Time** 17:12

Recovery Gas to Probe, Time 16:45

Peak Areas, mv-sec

10559

10796

10726

Average 10694

ppm /7.38

Recovery Gas to GC, Time 17:07

Peak Areas, mv-sec

14018

13986

14003

Average/

ppm

14002

8.57

Recovery 86.2%

H

# RECOVERY DATA

Number 3

Client: New Indy

Location: Catawba, NC

Source: #1 Combination Boiler

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

After Run 6 Before Run 7

Start Time 23:08

**End Time** 23:33

Recovery Gas to Probe, Time 23:08

Peak Areas, mv-sec

12008

11871

12366

Average

 $1208\overline{2}$  / 7.90

ppm

Recovery Gas to GC, Time 23:30

Peak Areas, mv-sec

14235

14081

14105

Average / ppm

14141

8.62

Recovery 91.7%

# **CALIBRATION DATA**

Number 1

Client: New Indy

Location: Catawba, NC

Project Number: 15730.001.008

Operator: **VD** 

Source: #1 Combination Boiler

Method 16

Ambient	Temperature: 72°C	Barometric Pr	essure: 29.25 in	. Hg
Analyte	H <sub>2</sub> S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	351	369	477	241
Ret. Time, sec	16.0	22.5	48.0	127.0
1 Flow = 27.4 mL/Min	<b>12.8</b> ppm	<b>13.5</b> ppm	<b>17.4</b> ppm	<b>8.81</b> ppm
Time: 06:00	izio ppini	Peak Areas		<b>0.01</b> ppiii
Time: 00.00	28200	16074	not	not
	27714	15989	used	used
	27544	15970	uscu	uscu
Average Area	27819	16011	·	
2 Flow = 59.5 mL/Min	<b>5.90</b> ppm	<b>6.20</b> ppm	<b>8.02</b> ppm	<b>4.06</b> ppm
Time: 06:49		Peak Areas	s, mv-sec	
	7504	3841	12348	15296
	7611	3774	12960	15012
	7641	3823	12909	15325
Average Area	7585	3813	12739	15211
3 Flow = 131 mL/Min	<b>2.68</b> ppm	<b>2.82</b> ppm	<b>3.64</b> ppm	<b>1.84</b> ppm
Time: 07:28		Peak Areas		
	1734	856	2868	3422
	1702	845	2771	3379
	1690	846	2788	3411
Average Area	1709	849	2809	3404
4 Flow = 271 mL/Min	<b>1.30</b> ppm	<b>1.36</b> ppm	<b>1.76</b> ppm	<b>0.89</b> ppm
Time: 07:53		Peak Areas	<del></del>	
	440	204	681	847
	433	209	682	842
	472	206	671	834
Average Area	448	206	678	841 /

# **CALIBRATION SUMMARY**

Number 1

Client: New Indy

Location: Catawba, NC

Source: **#1 Combination Boiler** Method **16** 

Project Number: 15730.001.008

Operator: **VD** 

H₂S	1	2	3	4		
Time	06:00	06:49	07:28	07:53		
Concentration, ppm	12.8	5.90	2.68	1.30		
Area, mv-sec	27819	7585	1709	448		
Calc. Conc., ppm	12.5	6.11	2.68	1.28		
% Error	-2.3	3.5	0.0	-1.2		
Calibration Curve	Slope	Intercept		r. Coeff.	Min. Area	Det. Lim.
	1.8102	2.4572	0.	9997	2	0.064
MeSH	1	2	3	4		
Time	06:00	06:49	07:28	07:53		
Concentration, ppm	13.5	6.20	2.82	1.36		
Area, mv-sec	16011	3813	849	206		
Calc. Conc., ppm	13.3	6.26	2.84	1.35		
% Error	-0.9	1.0	0.9	-0.9		
<b>Calibration Curve</b>	Slope	Intercept	Corı	r. Coeff.	Min. Area	Det. Lim.
	1.8989	2.0680	0.	9999	2	0.12
DMS	1	2	3			
Time	06:49	07:28	07:53			
Concentration, ppm	8.02	3.64	1.76			
Area, mv-sec	12739	2809	678			
Calc. Conc., ppm	17.6	7.86	3.68			
% Error	119.4	115.7	109.0			
<b>Calibration Curve</b>	Slope	Intercept	Cori	r. Coeff.	Min. Area	Det. Lim.
	1.8747	1.7700	0.	.9997	2	0.16
DMDS	1	2	3			
Time	06:49	07:28	07:53			
Concentration, ppm	4.06	1.84	0.89			
Area, mv-sec	15211	3404	841			
Calc. Conc., ppm	8.91	3.97	1.86			
% Error	119.6	115.3	109.2			
<b>Calibration Curve</b>	Slope	Intercept	Cor	r. Coeff.	Min. Area	Det. Lim.
	1.8501	2.4250	0.	.9997	2	0.071

# **CALIBRATION DATA**

Number 2

Client: New Indy Location: Catawba, NC

Project Number: 15730.001.008 Operator: **VD** 

Source: #1 Combination Boiler

Method 16

Ambient	Temperature: 72°C	Barometric P	Pressure: 29.25 in.	Hg
Analyte	H₂S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	351	369	477	241
Ret. Time, sec	16.0	22.5	48.0	127.0
1 Flow = 37.6 mL/Min	<b>9.34</b> ppm	<b>9.81</b> ppm	<b>12.7</b> ppm	<b>6.42</b> ppm
Time: 07:00		Peak Area	s, mv-sec	
	19790	9921	31382	38948
	20319	10076	31742	38693
	19852	9986	30214	37936
Average Area	19987	9995	31113	38526
2 Flow = 82.8 mL/Min	<b>4.24</b> ppm	<b>4.46</b> ppm	<b>5.77</b> ppm	<b>2.92</b> ppm
Time: 11:03		Peak Area	is, mv-sec	
	4788	2266	7435	8918
	4588	2209	7188	8687
	4419	2218	7198	8791
Average Area	4598 /	2231	7274	8798
3 Flow = 180 mL/Min	<b>1.95</b> ppm	<b>2.05</b> ppm	<b>2.66</b> ppm	<b>1.34</b> ppm
Time: 11:47		Peak Area	ıs, mv-sec	
	998	492	1607	1968
	985	496	1607	1963
	982	497	1614	1971
Average Area	988	495	1609	1967



# **CALIBRATION SUMMARY**

Number 2

Client: New Indy

Project Number: 15730.001.008

Location: Catawba, NC

Operator: **VD** 

Source: #1 Combination Boiler

Method 16

H <sub>2</sub> S	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	9.34	4.24	1.95		
Area, mv-sec	19987	4598	988		
Calc. Conc., ppm	9.26	4.31	1.94		
% Error	-0.8	1.6	-0.8		
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.
	1.9212	2.4433	0.9998	2	0.077
MeSH	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	9.81	4.46	2.05		
Area, mv-sec	9995	2231	495		
Calc. Conc., ppm	9.79	4.48	2.05		
% Error	-0.3	0.5	-0.3		
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.
	1.9203	2.0975	>0.9999	2	0.12
DMS	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	12.7	5.77	2.66		
Area, mv-sec	31113	7274	1609		
Calc. Conc., ppm	12.6	5.85	2.64		
% Error	-0.7	1.4	-0.7		
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.
	1.8927	2.4098	0.9999	2	0.077
DMDS	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	6.42	2.92	1.34		
Area, mv-sec	38526	8798	1967		
Calc. Conc., ppm	6.39	2.94	1.34		
% Error	-0.4	8.0	-0.4		
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.
	1.9009	3.0543	>0.9999	2	0.036



# **ANALYTES AND STANDARDS**

Client: New Indy Project Number: 15730.001.008

Location: Catawba, NC Operator: VD

Source: #1 Combination Boiler Method 16 Date: 22 Jun 2021

Analyte Molecular Weight	<b>H₂S</b> 34.08	<b>MeSH</b> 48.11	<b>DMS</b> 62.14	<b>DMDS</b> 94.20
Retention Time, sec	16.0	22.5	48.0	127.0
Peak Detection Window, sec	3.0	7.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	2.0	3.0
Ending Peak Width, sec	2.0	6.0	4.0	5.0
Permeation Device ID	T-51828	33-53274	89-53332	89-53266
Permeation Rate, ng/min	483	716 <i>-</i>	1197	918
Permeation Rate, nL/min*	351 ′	369	477	241

Barometric Pressure: 29.25 in. Hg Ambient Temperature: 72 °F

No Oxygen Correction

 $PR_{nl} = PR_{ng} x (V_{mol} / W_{mol}) x [(460^{\circ} + T_a) / T_s] x (P_s / P_b)$ 

Where:

PR<sub>nl</sub> = Permeation Rate by volume, nL/minPR<sub>ng</sub> = Permeation Rate by weight, ng/min

V<sub>mol</sub> = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

W<sub>mol</sub> = Molecular Weight of compound

T<sub>a</sub> = Ambient Temperature, °F

T<sub>s</sub> = Standard Temperature = 492°R (32 °F)

P<sub>s</sub> = Standard Pressure = 29.92 in Hg

P<sub>b</sub> = Barometric Pressure, in Hg

For example, H<sub>2</sub>S:

PR<sub>nl</sub> = 483 x (22.4 / 34.08) x [(460 + 72) / 492] x (29.92 / 29.25) = 351 nL/min

To calclate concentrations:

 $C = PR_{ni} / F_{d}$ 

Where:

**C** = Concentration, ppmv

**PR**<sub>nl</sub> = Permeation Rate by volume, nL/min

**F**<sub>d</sub> = Flow rate of diluent, mL/min

<sup>\*</sup>Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min. Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

# **INSTRUMENT INFORMATION**

Client: New Indy Project Number: 15730.001.008

Location: Catawba, NC Operator: VD

Source: #1 Combination Boiler Method 16 Date: 22 Jun 2021

File: C:\Data\210623 New Indy Catawba No. 1 CB.trs

Program Version: 2.0, built 15 May 2017 File Version: 2.0

Computer: WLT5 Trailer: 281

Analog Input Device: MCC USB-1608G GC Channel: 16

Sampling Rate: 0.050 sec. Data Interval: 0.5 sec.

Gas Chromatograph: Shimadzu GC8-A Serial No. C10493615061

**Detector Range: 10** 

	Gases		Temperatures, °C	Columns
	Press. psi	Flow mL/min	Column: 140	Primary: Carbopack
$H_2$	30	50	Detector: 140	Secondary: N/A
Air	30	60		Sample Loop: 4"
Carrier	50	30		-

# **Injection Cycle**

Total Length: 180 sec Sampling Time: 170 sec Load/Backflush Time: 80 sec

### **Default Integration Parameters**

Signal Threshold 0.67 mv Peak detection window ±10 sec Minimum peak area 2 mv-sec Minimum peak height 1 mv above baseline

#### **Dynacalibrator**

Chamber Temperature 50.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.25 in. Hg

# **RUN SUMMARY**

Number 4

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

O <sub>2</sub> CO <sub>2</sub> SO <sub>2</sub> Method EPA 3A EPA 3A EPA 6C
Conc. Units % % ppm

Time: 18:24 to 19:24

# **Run Averages**

11.2

8.2

304

#### Pre-run Bias at 16:43

Zero Bias	0.0	0.0	8
Span Bias	10.0	10.1	234
Span Gas	10.1	10.2	242

# Post-run Bias at 19:27

Zero Bias	0.0	0.0	7
Span Bias	10.0	10.1	240
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

11.4 / 8.3 / 313



# **RUN SUMMARY**

Number 5

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

88 - 411	O <sub>2</sub>	CO <sub>2</sub>	SO <sub>2</sub>	
Method	EPA 3A	EPA 3A	EPA 6C	
Conc. Units	%	%	ppm	

Time: 20:19 to 21:19

# **Run Averages**

11.7 7.7 342

#### Pre-run Bias at 19:27

Zero Bias	0.0	0.0	7
Span Bias	10.0	10.1	240
Span Gas	10.1	10.2	242

# Post-run Bias at 21:26

Zero Bias	0.0	0.0	4
Span Bias	10.0	10.1	240
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

11.9 / 7.8 / 348 /



# **RUN SUMMARY**

Number 6

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

ation	Boiler	Calibration	1

	$O_2$	CO <sub>2</sub>	SO <sub>2</sub>
Method	EPA 3A	EPA 3A	EPA 6C
Conc. Units	%	%	ppm

Time: 22:02 to 23:02

# **Run Averages**

11.5

8.1

340

#### Pre-run Bias at 21:26

Zero Bias	0.0	0.0	4
Span Bias	10.0	10.1	240
Span Gas	10.1	10.2	242

# Post-run Bias at 23:05

Zero Bias	0.0	0.0	3
Span Bias	10.0	10.2	234
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

11.6 \( \) 8.1 \( \) 349 \( \)



# RUN DATA Number 4

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Time	0:	2	CO	2	SC	)2	
Time	mv	%	mv	%	mv	ppm	
		Wit	h NCGs				
18:25	3619	10.9	3462	8.6	2834	283	
18:26	3597	10.8	3490	8.6	2890	289	
18:27	3632	10.9	3514	8.7	3019	302	
18:28	3736	11.2	3454	8.6	2939	294	
18:29	3743	11.2	3343	8.3	2831	283	
18:30	3786	11.4	3340	8.3	2799	280	
18:31	3778	11.4	3290	8.1	2774	278	
18:32	3808	11.4	3289	8.1	2802	280	
18:33	3735	11.2	3268	8.1	2860	286	
18:34	3656	11.0	3362	8.3	3089	309	
18:35	3609	10.8	3449	8.5	3124	312	
18:36	3645	11.0	3484	8.6	3073	307	
18:37	3785	11.4	3424	8.5	2834	283	
18:38	3777	11.4	3290	8.1	2904	290	
18:39	3804	11.4	3285	8.1	2907	291	
18:40	3718	11.2	3264	8.1	2895	290	
18:41	3690	11.1	3351	8.3	3093	309	
18:42	3686	11.1	3407	8.4	3117	312	
18:43	3696	11.1	3388	8.4	3011	301	
18:44	3722	11.2	3371	8.3	3035	304	
18:45	3805	11.4	3340	8.3	2989	299	
18:46	3854	11.6	3235	8.0	2951	295	
18:47	3785	11.4	3209	7.9	2977	298	
18:48	3779	11.4	3286	8.1	2943	294	
18:49	3850	11.6	3265	8.1	3179	318	
18:50	3762	11.3	3224	8.0	3171	317	
18:51	3752	11.3	3303	8.2	3078	308	
18:52	3743	11.2	3328	8.2	2932	293	
18:53	3767	11.3	3329	8.2	2943	294	
18:54	3817	11.5	3300	8.2	2907	291	
18:55	3971	11.9	3223	8.0	2931	293	
18:56	3965	11.9	3060	7.6	3159	316	
18:57	3931	11.8	3059	7.6	3147	315	
18:58	3776	11.3	3123	7.7	3151	315	
18:59	3823	11.5	3263	8.1	2999	300	
19:00	3894	11.7	3204	7.9	2846	285	
19:01	3840	11.5	3146	7.8	2853	285	
19:02	3800	11.4	3212	8.0	2855	286	
19:03	3845	11.6	3258	8.1	3066	307	
19:04	3895	11.7	3188	7.9	3102	310	

Number 4

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Time	0	2	CC	)2	S	$O_2$
Time	mv	%	mv	%	mv	ppm
19:05	3903	11.7	3137	7.8	3182	318
19:06	3929	11.8	3117	7.7	3008	301
19:07	3885	11.7	3108	7.7	2900	290
19:08	3825	11.5	3165	7.8	2940	294
19:09	3735	11.2	3242	8.0	2885	289
19:10	3711	11.2	3328	8.2	3079	308
19:11	3631	10.9	3363	8.3	3211	321
19:12	3560	10.7	3452	8.5	3362	336
19:13	3537	10.6	3508	8.7	3482	348
19:14	3508	10.5	3541	8.8	3373	337
19:15	3551	10.7	3564	8.8	3320	332
19:16	3619	10.9	3505	8.7	3287	329
19:17	3665	11.0	3436	8.5	3239	324
19:18	3700	11.1	3387	8.4	3060	306
19:19	3660	11.0	3378	8.4	3177	318
19:20	3705	11.1	3392	8.4	3291	329
19:21	3721	11.2	3370	8.3	3272	327
19:22	3700	11.1	3333	8.3	3148	315
19:23	3610	10.8	3373	8.4	3082	308
19:24	3517	10.6	3499	8.7	3096	310
Avgs	3742	11.2	3321	8.2	3040	304

Number 5

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Time o	0	2	CC	)2	SC	) <sub>2</sub>	
Time	mv	%	mv	%	mv	ppm	
		Wit	h NCGs				
20:20	3956	11.9	3038	7.5	3579	358	
20:21	3924	11.8	3098	7.7	3395	340	
20:22	3929	11.8	3122	7.7	3279	328	
20:23	4008	12.0	3112	7.7	3315	332	
20:24	4084	12.3	3018	7.5	3351	335	
20:25	4065	12.2	2954	7.3	3630	363	
20:26	4084	12.3	2958	7.3	3573	357	
20:27	4072	12.2	2961	7.3	3514	351	
20:28	4153	12.5	2959	7.3	3362	336	
20:29	4171	12.5	2872	7.1	3369	337	
20:30	4044	12.2	2857	7.1	3410	341	
20:31	3988	12.0	2950	7.3	3362	336	
20:32	3990	12.0	2998	7.4	3267	327	
20:33	3969	11.9	2992	7.4	3560	356	
20:34	3943	11.8	3019	7.5	3537	354	
20:35	3971	11.9	3035	7.5	3592	359	
20:36	3934	11.8	3019	7.5	3468	347	
20:37	3991	12.0	3044	7.5	3319	332	
20:38	4000	12.0	2989	7.4	3404	340	
20:39	3953	11.9	2981	7.4	3454	345	
20:40	3971	11.9	3036	7.5	3310	331	
20:41	4056	12.2	3000	7.4	3318	332	
20:42	4112	12.4	2902	7.2	3348	335	
20:43	4009	12.0	2864	7.1	3545	355	
20:44	4022	12.1	2939	7.3	3770	377	
20:45	4027	12.1	2902	7.2	3729	373	
20:46	4034	12.1	2870	7.1	3641	364	
20:47	3964	11.9	2843	7.0	3487	349	
20:48	3886	11.7	2936	7.3	3469	347	
20:49	3797	11.4	3030	7.5	3553	355	
20:50	3801	11.4	3109	7.7	3451	345	
20:51	3768	11.3	3120	7.7	3428	343	
20:52	3639	10.9	3223	8.0	3434	343	
20:53	3636	10.9	3370	8.3	3400	340	
20:54	3766	11.3	3370	8.3	3361	336	
20:55	3847	11.6	3259	8.1	3411	341	
20:56	3799	11.4	3185	7.9	3420	342	
20:57	3728	11.2	3255	8.1	3504	350	
20:58	3684	11.1	3338	8.3	3512	351	
20:59	3656	11.0	3394	8.4	3477	348	

Number 5

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: VD

Timo	C	)2	C	$O_2$	S	<b>O</b> <sub>2</sub>
Time	mv	%	mv	%	mv	ppm
21:00	3787	11.4	3427	8.5	3314	331
21:01	3885	11.7	3278	8.1	3325	333
21:02	3882	11.7	3206	7.9	3290	329
21:03	3886	11.7	3198	7.9	3331	333
21:04	3864	11.6	3209	7.9	3355	336
21:05	3808	11.4	3226	8.0	3328	333
21:06	3745	11.3	3295	8.2	3338	334
21:07	3685	11.1	3379	8.4	3344	334
21:08	3694	11.1	3433	8.5	3353	335
21:09	3773	11.3	3427	8.5	3305	331
21:10	3853	11.6	3327	8.2	3342	334
21:11	3950	11.9	3240	8.0	3311	331
21:12	4017	12.1	3118	7.7	3392	339
21:13	3936	11.8	3052	7.6	3427	343
21:14	3850	11.6	3122	7.7	3324	332
21:15	3843	11.5	3208	7.9	3376	338
21:16	3806	11.4	3212	8.0	3385	339
21:17	3814	11.5	3259	8.1	3365	337
21:18	3661	11.0	3273	8.1	3347	335
21:19	3639	10.9	3428	8.5	3435	344
Avgs	3897	11.7	3121	7.7	3422	342

Number 6

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

With NCGs           22:03         3783         11.4         3378         8.4         3499         350           22:04         3827         11.5         3287         8.1         3478         348           22:05         3799         11.4         3284         8.1         3441         344           22:06         3903         11.7         3265         8.1         3620         362           22:07         3885         11.7         3173         7.9         3625         362           22:08         3946         11.9         3173         7.9         3625         362           22:09         3995         12.0         3108         7.7         3377         388           22:11         3913         11.8         3066         7.6         3743         374           22:11         3919         11.8         3121         7.7         3484         348           22:13         3401         12.0         3103         7.7         3397         340           22:14         3960         11.9         3053         7.6         3731         373           22:13         39401         12.0         3134	 	Time O2 CO2					D <sub>2</sub>	
22:03       3783       11.4       3378       8.4       3499       350         22:04       3827       11.5       3287       8.1       3478       348         22:06       3903       11.7       3284       8.1       3441       344         22:07       3885       11.7       3171       7.8       3452       345         22:08       3946       11.9       3173       7.9       3625       362         22:09       3995       12.0       3108       7.7       3377       338         22:10       3937       11.8       3066       7.6       3743       374         22:11       3913       11.8       3149       7.8       3695       369         22:14       3960       11.9       3053       7.6       3731       373         22:14       3960       11.9       3053       7.6       3731       373         22:15       3924       11.8       3096       7.7       3490       349         22:16       3988       12.0       3061       7.6       3401       340         22:19       3942       11.8       3042       7.5       3534 <td< th=""><th>Time</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></td<>	Time							
22:03       3783       11.4       3378       8.4       3499       350         22:04       3827       11.5       3287       8.1       3478       348         22:06       3903       11.7       3284       8.1       3441       344         22:07       3885       11.7       3171       7.8       3452       345         22:08       3946       11.9       3173       7.9       3625       362         22:09       3995       12.0       3108       7.7       3377       338         22:10       3937       11.8       3066       7.6       3743       374         22:11       3913       11.8       3149       7.8       3695       369         22:14       3960       11.9       3053       7.6       3731       373         22:14       3960       11.9       3053       7.6       3731       373         22:15       3924       11.8       3096       7.7       3490       349         22:16       3988       12.0       3061       7.6       3401       340         22:19       3942       11.8       3042       7.5       3534 <td< th=""><th> </th><th></th><th></th><th></th><th></th><th></th><th></th><th> </th></td<>	 							 
22:04       3827       11.5       3287       8.1       3478       348         22:05       3799       11.4       3284       8.1       3441       3444         22:07       3885       11.7       3265       8.1       3620       362         22:08       3946       11.9       3173       7.9       3625       362         22:09       3995       12.0       3108       7.7       3377       338         22:10       3937       11.8       3066       7.6       3743       374         22:11       3919       11.8       31421       7.7       3484       348         22:12       3919       11.8       31421       7.7       3484       348         22:13       4001       12.0       3130       7.7       3397       340         22:14       3960       11.9       3053       7.6       3731       373         22:15       3924       11.8       3094       7.7       3490       349         22:16       3988       12.0       3050       7.5       3693       369         22:19       3942       11.8       3042       7.5       3534	00.00	0700				2400	250	
22:05       3799       11.4       3284       8.1       3441       344         22:06       3903       11.7       3265       8.1       3620       362         22:08       3946       11.9       3173       7.9       3625       362         22:09       3995       12.0       3108       7.7       3373       338         22:10       3937       11.8       3066       7.6       3743       374         22:11       3913       11.8       3121       7.7       3484       348         22:12       3919       11.8       3121       7.7       3484       348         22:13       3960       11.9       3053       7.6       3731       373         22:14       3960       11.9       3053       7.6       3731       373         22:16       3988       12.0       3134       7.8       3681       368         22:17       3995       12.0       3061       7.6       3741       340         22:18       3987       12.0       3050       7.5       3693       369         22:19       3942       11.8       3042       7.5       3534 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:06       3903       11.7       3265       8.1       3620       362         22:07       3885       11.7       3171       7.8       3452       345         22:09       3995       12.0       3108       7.7       3377       338         22:10       3997       11.8       3066       7.6       3743       374         22:11       3919       11.8       3149       7.8       3695       369         22:13       4001       12.0       3130       7.7       3397       340         22:14       3960       11.9       3053       7.6       3731       373         22:15       3924       11.8       3096       7.7       3490       349         22:16       3988       12.0       3134       7.8       3681       368         22:17       3995       12.0       3061       7.6       3401       340         22:18       3987       12.0       3050       7.5       3693       369         22:19       3942       11.8       3042       7.5       3694       368         22:19       3942       11.8       3042       7.5       3693 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:07       3885       11.7       3171       7.8       3452       345         22:08       3946       11.9       3173       7.9       3625       362         22:09       3995       12.0       3108       7.7       3374       338         22:10       3937       11.8       3066       7.6       3743       374         22:11       3919       11.8       3149       7.8       3695       369         22:13       4001       12.0       3130       7.7       3484       348         22:14       3960       11.9       3053       7.6       3731       373         22:15       3924       11.8       3096       7.7       3490       349         22:16       3988       12.0       3134       7.8       3681       368         22:17       3995       12.0       3061       7.6       3401       340         22:18       3987       12.0       3050       7.5       3693       369         22:19       3842       11.8       3042       7.5       3693       369         22:21       3882       11.7       3164       7.8       3651 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:08       3946       11.9       3173       7.9       3625       362         22:09       3995       12.0       3108       7.7       3377       338         22:10       3937       11.8       3066       7.6       3743       374         22:11       3919       11.8       3121       7.7       3484       348         22:12       3919       11.8       3149       7.8       3695       369         22:13       4001       12.0       3130       7.7       3397       340         22:15       3924       11.8       3096       7.7       3490       349         22:16       3988       12.0       3061       7.6       3401       340         22:18       3987       12.0       3050       7.5       3693       369         22:19       3942       11.8       3042       7.5       3534       353         22:20       3863       11.6       3099       7.7       3747       375         22:21       3882       11.7       3164       7.8       3551       355         22:23       3719       11.2       3226       8.0       3364 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:09       3995       12.0       3108       7.7       3377       338         22:10       3997       11.8       3066       7.6       3743       374         22:11       3919       11.8       3121       7.7       3484       348         22:12       3919       11.8       3149       7.8       3695       369         22:13       4001       12.0       3130       7.7       3397       340         22:14       3960       11.9       3053       7.6       3731       373         22:16       3988       12.0       3134       7.8       3681       368         22:17       3995       12.0       3060       7.5       3693       369         22:18       3987       12.0       3050       7.5       3693       369         22:21       3863       11.6       3099       7.7       3747       375         22:21       3863       11.5       3156       7.8       3682       368         22:21       3886       11.5       3156       7.8       3682       368         22:23       3719       11.2       3226       8.0       3364 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:10       3937       11.8       3066       7.6       3743       374         22:11       3913       11.8       3121       7.7       3484       348         22:12       3919       11.8       3149       7.8       3695       369         22:13       4001       12.0       3130       7.7       3397       340         22:14       3960       11.9       3053       7.6       3731       373         22:15       3924       11.8       3096       7.7       3490       349         22:16       3988       12.0       3061       7.6       3401       340         22:18       3987       12.0       3050       7.5       3693       369         22:19       3942       11.8       3042       7.5       3534       353         22:20       3863       11.6       3099       7.7       3747       375         22:21       3882       11.7       3164       7.8       3651       355         22:22       3836       11.5       3156       7.8       3682       368         22:23       3719       11.2       3226       8.0       3364 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:11       3913       11.8       3121       7.7       3484       348         22:12       3919       11.8       3149       7.8       3695       369         22:13       4001       12.0       3130       7.7       3397       340         22:14       3960       11.9       3053       7.6       3731       373         22:16       3988       12.0       3134       7.8       3681       368         22:17       3995       12.0       3061       7.6       3401       340         22:19       3942       11.8       3042       7.5       3693       369         22:19       3942       11.8       3042       7.5       3534       353         22:20       3863       11.6       3099       7.7       3747       375         22:21       3882       11.7       3164       7.8       3551       355         22:22       3836       11.5       3156       7.8       3682       368         22:23       3719       11.2       3226       8.0       3364       336         22:24       3661       11.0       3350       8.3       3814 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:12       3919       11.8       3149       7.8       3695       369         22:13       4001       12.0       3130       7.7       3397       340         22:14       3960       11.9       3053       7.6       3731       373         22:15       3924       11.8       3096       7.7       3490       349         22:16       3988       12.0       3134       7.8       3681       368         22:17       3995       12.0       3061       7.6       3401       340         22:18       3987       12.0       3050       7.5       3693       369         22:19       3942       11.8       3042       7.5       3534       353         22:20       3863       11.6       3099       7.7       3747       375         22:21       3882       11.7       3164       7.8       3551       355         22:221       3886       11.5       3156       7.8       3682       368         22:23       3719       11.2       3226       8.0       3364       336         22:24       3661       11.0       3350       8.3       3814 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>								
22:13       4001       12.0       3130       7.7       3397       340         22:14       3960       11.9       3053       7.6       3731       373         22:16       3988       12.0       3134       7.8       3681       368         22:17       3995       12.0       3061       7.6       3401       340         22:18       3987       12.0       3050       7.5       3693       369         22:19       3942       11.8       3042       7.5       3534       353         22:20       3863       11.6       3099       7.7       3747       375         22:21       3882       11.7       3164       7.8       3551       355         22:22       3836       11.5       3156       7.8       3682       368         22:23       3719       11.2       3226       8.0       3364       336         22:24       3661       11.0       3422       8.5       3662       366         22:25       3671       11.0       3422       8.5       3662       366         22:26       3758       11.3       3379       8.4       3452 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
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22:15       3924       11.8       3096       7.7       3490       349         22:16       3988       12.0       3134       7.8       3681       368         22:17       3995       12.0       3061       7.6       3401       340         22:18       3987       12.0       3050       7.5       3693       369         22:19       3942       11.8       3042       7.5       3534       353         22:20       3863       11.6       3099       7.7       3747       375         22:21       3882       11.7       3164       7.8       3551       355         22:22       3836       11.5       3156       7.8       3682       368         22:23       3719       11.2       3226       8.0       3364       381         22:24       3661       11.0       3350       8.3       3814       381         22:25       3671       11.0       3422       8.5       3662       366         22:27       3744       11.3       3303       8.2       3443       344         22:28       3664       11.0       344       8.3       3567								
22:16       3988       12.0       3134       7.8       3681       368         22:17       3995       12.0       3061       7.6       3401       340         22:18       3987       12.0       3050       7.5       3693       369         22:19       3942       11.8       3042       7.5       3534       353         22:20       3863       11.6       3099       7.7       3747       375         22:21       3882       11.7       3164       7.8       3682       368         22:22       3836       11.5       3156       7.8       3682       368         22:23       3719       11.2       3226       8.0       3364       336         22:24       3661       11.0       3350       8.3       3814       381         22:25       3671       11.0       3422       8.5       3662       366         22:27       3744       11.3       3309       8.2       3443       344         22:28       3664       11.0       3344       8.3       3567       357         22:29       3639       10.9       3427       8.5       3384 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:17       3995       12.0       3061       7.6       3401       340         22:18       3987       12.0       3050       7.5       3693       369         22:19       3942       11.8       3042       7.5       3534       353         22:20       3863       11.6       3099       7.7       3747       375         22:21       3882       11.7       3164       7.8       3551       355         22:22       3836       11.5       3156       7.8       3682       368         22:23       3719       11.2       3226       8.0       3364       336         22:25       3671       11.0       3422       8.5       3662       366         22:25       3758       11.3       3379       8.4       3455       345         22:27       3744       11.3       3303       8.2       3443       344         22:28       3664       11.0       3344       8.3       3567       357         22:29       3639       10.9       3427       8.5       3384       338         22:31       3762       11.3       3362       8.3       3397 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:18       3987       12.0       3050       7.5       3693       369         22:19       3942       11.8       3042       7.5       3534       353         22:20       3863       11.6       3099       7.7       3747       375         22:21       3882       11.7       3164       7.8       3551       355         22:22       3836       11.5       3156       7.8       3682       368         22:23       3719       11.2       3226       8.0       3364       336         22:24       3661       11.0       3350       8.3       3814       381         22:25       3671       11.0       3422       8.5       3662       366         22:27       3744       11.3       3303       8.2       3443       344         22:28       3664       11.0       3344       8.3       3567       357         22:29       3639       10.9       3427       8.5       3384       338         22:30       3708       11.1       3438       8.5       3441       344         22:31       3762       11.3       3302       8.2       3207 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:19       3942       11.8       3042       7.5       3534       353         22:20       3863       11.6       3099       7.7       3747       375         22:21       3882       11.7       3164       7.8       3551       355         22:22       3836       11.5       3156       7.8       3682       368         22:24       3661       11.0       3350       8.3       3814       381         22:25       3671       11.0       3422       8.5       3662       366         22:26       3758       11.3       3379       8.4       3452       345         22:27       3744       11.3       3303       8.2       3443       344         22:29       3639       10.9       3427       8.5       3384       338         22:30       3708       11.1       3438       8.5       3441       344         22:31       3762       11.3       3302       8.2       3484       348         22:32       3760       11.3       3302       8.2       3484       342         22:34       3794       11.4       3259       8.1       3201 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:20       3863       11.6       3099       7.7       3747       375         22:21       3882       11.7       3164       7.8       3551       355         22:22       3836       11.5       3156       7.8       3682       368         22:23       3719       11.2       3226       8.0       3364       336         22:24       3661       11.0       3350       8.3       3814       381         22:25       3671       11.0       3422       8.5       3662       366         22:26       3758       11.3       3379       8.4       3452       345         22:27       3744       11.3       3303       8.2       3443       344         22:28       3664       11.0       3344       8.3       3567       357         22:29       3639       10.9       3427       8.5       3384       338         22:30       3708       11.1       3438       8.5       3441       344         22:31       3762       11.3       3302       8.2       3484       348         22:33       3739       11.2       3320       8.2       3418 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:21       3882       11.7       3164       7.8       3551       355         22:22       3836       11.5       3156       7.8       3682       368         22:23       3719       11.2       3226       8.0       3364       336         22:24       3661       11.0       3350       8.3       3814       381         22:25       3671       11.0       3422       8.5       3662       366         22:26       3758       11.3       3379       8.4       3452       345         22:27       3744       11.3       3303       8.2       3443       344         22:28       3664       11.0       3344       8.3       3567       357         22:29       3639       10.9       3427       8.5       3384       338         22:30       3708       11.1       3438       8.5       3441       344         22:31       3762       11.3       3362       8.3       3397       340         22:32       3760       11.3       3302       8.2       3484       348         22:33       3799       11.4       3259       8.1       3201 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:22       3836       11.5       3156       7.8       3682       368         22:23       3719       11.2       3226       8.0       3364       336         22:24       3661       11.0       3350       8.3       3814       381         22:25       3671       11.0       3422       8.5       3662       366         22:26       3758       11.3       3379       8.4       3452       345         22:27       3744       11.3       3303       8.2       3443       344         22:28       3664       11.0       3344       8.3       3567       357         22:29       3639       10.9       3427       8.5       3384       338         22:30       3708       11.1       3438       8.5       3441       344         22:31       3762       11.3       3302       8.2       3484       348         22:32       3760       11.3       3302       8.2       3484       348         22:34       3794       11.4       3259       8.1       3201       320         22:36       3766       11.3       3282       8.1       3358 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:23       3719       11.2       3226       8.0       3364       336         22:24       3661       11.0       3350       8.3       3814       381         22:25       3671       11.0       3422       8.5       3662       366         22:26       3758       11.3       3379       8.4       3452       345         22:27       3744       11.3       3303       8.2       3443       344         22:28       3664       11.0       3344       8.3       3567       357         22:29       3639       10.9       3427       8.5       3384       338         22:30       3708       11.1       3438       8.5       3441       344         22:31       3762       11.3       3362       8.3       3397       340         22:32       3760       11.3       3302       8.2       3484       348         22:33       3739       11.2       3320       8.2       3418       342         22:34       3794       11.4       3259       8.1       3201       320         22:36       3766       11.3       3282       8.1       3358 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:24       3661       11.0       3350       8.3       3814       381         22:25       3671       11.0       3422       8.5       3662       366         22:26       3758       11.3       3379       8.4       3452       345         22:27       3744       11.3       3303       8.2       3443       344         22:28       3664       11.0       3344       8.3       3567       357         22:29       3639       10.9       3427       8.5       3384       338         22:30       3708       11.1       3438       8.5       3441       344         22:31       3762       11.3       3362       8.3       3397       340         22:32       3760       11.3       3302       8.2       3484       348         22:33       3739       11.2       3320       8.2       3418       342         22:34       3794       11.4       3259       8.1       3201       320         22:36       3766       11.3       3282       8.1       3358       336         22:37       3843       11.5       3292       8.2       3155 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:25       3671       11.0       3422       8.5       3662       366         22:26       3758       11.3       3379       8.4       3452       345         22:27       3744       11.3       3303       8.2       3443       344         22:28       3664       11.0       3344       8.3       3567       357         22:29       3639       10.9       3427       8.5       3384       338         22:30       3708       11.1       3438       8.5       3441       344         22:31       3762       11.3       3362       8.3       3397       340         22:32       3760       11.3       3302       8.2       3484       348         22:33       3739       11.2       3320       8.2       3207       321         22:34       3794       11.4       3259       8.1       3201       320         22:36       3766       11.3       3282       8.1       3358       336         22:37       3843       11.5       3292       8.2       3155       316         22:38       3806       11.4       3222       8.0       3431 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:26       3758       11.3       3379       8.4       3452       345         22:27       3744       11.3       3303       8.2       3443       344         22:28       3664       11.0       3344       8.3       3567       357         22:29       3639       10.9       3427       8.5       3384       338         22:30       3708       11.1       3438       8.5       3441       344         22:31       3762       11.3       3362       8.3       3397       340         22:32       3760       11.3       3302       8.2       3484       348         22:33       3739       11.2       3320       8.2       3207       321         22:34       3794       11.4       3259       8.1       3201       320         22:36       3766       11.3       3282       8.1       3358       336         22:37       3843       11.5       3292       8.2       3155       316         22:38       3806       11.4       3222       8.0       3431       343         22:39       3791       11.4       3260       8.1       3226 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:27       3744       11.3       3303       8.2       3443       344         22:28       3664       11.0       3344       8.3       3567       357         22:29       3639       10.9       3427       8.5       3384       338         22:30       3708       11.1       3438       8.5       3441       344         22:31       3762       11.3       3362       8.3       3397       340         22:32       3760       11.3       3302       8.2       3484       348         22:33       3739       11.2       3320       8.2       3207       321         22:34       3794       11.4       3316       8.2       3418       342         22:35       3790       11.4       3259       8.1       3201       320         22:36       3766       11.3       3282       8.1       3358       336         22:37       3843       11.5       3292       8.2       3155       316         22:38       3806       11.4       3222       8.0       3431       343         22:39       3791       11.4       3260       8.1       3226 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:28       3664       11.0       3344       8.3       3567       357         22:29       3639       10.9       3427       8.5       3384       338         22:30       3708       11.1       3438       8.5       3441       344         22:31       3762       11.3       3362       8.3       3397       340         22:32       3760       11.3       3302       8.2       3484       348         22:33       3739       11.2       3320       8.2       3207       321         22:34       3794       11.4       3316       8.2       3418       342         22:35       3790       11.4       3259       8.1       3201       320         22:36       3766       11.3       3282       8.1       3358       336         22:37       3843       11.5       3292       8.2       3155       316         22:38       3806       11.4       3222       8.0       3431       343         22:39       3791       11.4       3260       8.1       3226       323         22:40       3770       11.3       3282       8.1       3436 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:29       3639       10.9       3427       8.5       3384       338         22:30       3708       11.1       3438       8.5       3441       344         22:31       3762       11.3       3362       8.3       3397       340         22:32       3760       11.3       3302       8.2       3484       348         22:33       3739       11.2       3320       8.2       3207       321         22:34       3794       11.4       3316       8.2       3418       342         22:35       3790       11.4       3259       8.1       3201       320         22:36       3766       11.3       3282       8.1       3358       336         22:37       3843       11.5       3292       8.2       3155       316         22:38       3806       11.4       3222       8.0       3431       343         22:39       3791       11.4       3260       8.1       3226       323         22:40       3770       11.3       3282       8.1       3436       344         22:41       3739       11.2       3297       8.2       3194 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
22:30       3708       11.1       3438       8.5       3441       344         22:31       3762       11.3       3362       8.3       3397       340         22:32       3760       11.3       3302       8.2       3484       348         22:33       3739       11.2       3320       8.2       3207       321         22:34       3794       11.4       3316       8.2       3418       342         22:35       3790       11.4       3259       8.1       3201       320         22:36       3766       11.3       3282       8.1       3358       336         22:37       3843       11.5       3292       8.2       3155       316         22:38       3806       11.4       3222       8.0       3431       343         22:39       3791       11.4       3260       8.1       3226       323         22:40       3770       11.3       3282       8.1       3436       344         22:41       3739       11.2       3297       8.2       3194       319								
22:31       3762       11.3       3362       8.3       3397       340         22:32       3760       11.3       3302       8.2       3484       348         22:33       3739       11.2       3320       8.2       3207       321         22:34       3794       11.4       3316       8.2       3418       342         22:35       3790       11.4       3259       8.1       3201       320         22:36       3766       11.3       3282       8.1       3358       336         22:37       3843       11.5       3292       8.2       3155       316         22:38       3806       11.4       3222       8.0       3431       343         22:39       3791       11.4       3260       8.1       3226       323         22:40       3770       11.3       3282       8.1       3436       344         22:41       3739       11.2       3297       8.2       3194       319								
22:32       3760       11.3       3302       8.2       3484       348         22:33       3739       11.2       3320       8.2       3207       321         22:34       3794       11.4       3316       8.2       3418       342         22:35       3790       11.4       3259       8.1       3201       320         22:36       3766       11.3       3282       8.1       3358       336         22:37       3843       11.5       3292       8.2       3155       316         22:38       3806       11.4       3222       8.0       3431       343         22:39       3791       11.4       3260       8.1       3226       323         22:40       3770       11.3       3282       8.1       3436       344         22:41       3739       11.2       3297       8.2       3194       319								
22:33       3739       11.2       3320       8.2       3207       321         22:34       3794       11.4       3316       8.2       3418       342         22:35       3790       11.4       3259       8.1       3201       320         22:36       3766       11.3       3282       8.1       3358       336         22:37       3843       11.5       3292       8.2       3155       316         22:38       3806       11.4       3222       8.0       3431       343         22:39       3791       11.4       3260       8.1       3226       323         22:40       3770       11.3       3282       8.1       3436       344         22:41       3739       11.2       3297       8.2       3194       319								
22:34       3794       11.4       3316       8.2       3418       342         22:35       3790       11.4       3259       8.1       3201       320         22:36       3766       11.3       3282       8.1       3358       336         22:37       3843       11.5       3292       8.2       3155       316         22:38       3806       11.4       3222       8.0       3431       343         22:39       3791       11.4       3260       8.1       3226       323         22:40       3770       11.3       3282       8.1       3436       344         22:41       3739       11.2       3297       8.2       3194       319								
22:35       3790       11.4       3259       8.1       3201       320         22:36       3766       11.3       3282       8.1       3358       336         22:37       3843       11.5       3292       8.2       3155       316         22:38       3806       11.4       3222       8.0       3431       343         22:39       3791       11.4       3260       8.1       3226       323         22:40       3770       11.3       3282       8.1       3436       344         22:41       3739       11.2       3297       8.2       3194       319								
22:36       3766       11.3       3282       8.1       3358       336         22:37       3843       11.5       3292       8.2       3155       316         22:38       3806       11.4       3222       8.0       3431       343         22:39       3791       11.4       3260       8.1       3226       323         22:40       3770       11.3       3282       8.1       3436       344         22:41       3739       11.2       3297       8.2       3194       319								
22:37 3843 11.5 3292 8.2 3155 316 22:38 3806 11.4 3222 8.0 3431 343 22:39 3791 11.4 3260 8.1 3226 323 22:40 3770 11.3 3282 8.1 3436 344 22:41 3739 11.2 3297 8.2 3194 319								
22:38 3806 11.4 3222 8.0 3431 343 22:39 3791 11.4 3260 8.1 3226 323 22:40 3770 11.3 3282 8.1 3436 344 22:41 3739 11.2 3297 8.2 3194 319								
22:39 3791 11.4 3260 8.1 3226 323 22:40 3770 11.3 3282 8.1 3436 344 22:41 3739 11.2 3297 8.2 3194 319								
22:40 3770 11.3 3282 8.1 3436 344 22:41 3739 11.2 3297 8.2 3194 319								
22:41 3739 11.2 3297 8.2 3194 319								
22:42 3751 11.3 3334 8.3 3436 344								
	22:42	3751	11.3	3334	8.3	3436	344	

# RUN DATA Number 6

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Time	0	)2	CC	$O_2$	S	$O_2$
Time	mv	%	mv	%	mv	ppm
22:43	3700	11.1	3326	8.2	3191	319
22:44	3696	11.1	3400	8.4	3382	338
22:45	3748	11.3	3372	8.3	3201	320
22:46	3738	11.2	3342	8.3	3358	336
22:47	3778	11.4	3339	8.3	3122	312
22:48	3787	11.4	3295	8.2	3252	325
22:49	3747	11.3	3299	8.2	3253	325
22:50	3784	11.4	3320	8.2	3166	317
22:51	3745	11.3	3311	8.2	3005	301
22:52	3796	11.4	3327	8.2	3280	328
22:53	3776	11.3	3279	8.1	3106	311
22:54	3785	11.4	3286	8.1	3386	339
22:55	3843	11.5	3277	8.1	3171	317
22:56	3787	11.4	3233	8.0	3267	327
22:57	3858	11.6	3256	8.1	3106	311
22:58	3805	11.4	3208	7.9	3292	329
22:59	3790	11.4	3271	8.1	3170	317
23:00	3860	11.6	3270	8.1	3222	322
23:01	3883	11.7	3196	7.9	3166	317
23:02	3897	11.7	3187	7.9	3246	325
Avgs	3816	11.5	3253	8.1	3396	340

Number 5

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 23 Jun 2021

Start Time: 16:43

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

		Bi	as Resu	Its		
Standard Gas	Cal. %	Response mv	Bias %	Difference %	Error %	Status
Zero	0.0	6	0.0	0.0	0.0 //	Pass
Span	10.1	3335	10.0	-0.1	-0.5	Pass
		Cali	bration	Drift		
Standard	Initial*	Fina	al	Difference	Drift	
Gas	%	mv	%	%	%	Status
Zero	0.0	6	0.0	0.0	0.0	Pass
Span	10.0	3335	10.0	0.0	0.0	Pass
-	*Bias No. 4					

CO<sub>2</sub>

Method: EPA 3A Span Conc. 20.3 %

		Bi	as Resu	lts		
Standard	Cal.	Response	Bias	<b>Difference</b>	Error	
Gas	%	mv	%	%	% /	Status
Zero	0.0	12	0.0	0.0	0.0	Pass
Span	10.2	4067	10.1	-0.1	-0.5	Pass
		Cali	bration	Drift		
Standard	Initial*	Fina	al	<b>Difference</b>	Drift	
Gas	%	mv	%	%	%	Status
Zero	0.0	12	0.0	0.0	0.0	Pass
Span	10.2	4067	10.1	-0.1	-0.5	Pass
-	*Bias No. 4	1				



Number 5

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Project Number: 15730.001.008

Operator: VD

Date: 23 Jun 2021

Calibration 1

Start Time: 16:43

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

		Bi	as Resu	Its		
Standard Gas	Cal. ppm	Response mv	Bias ppm	Difference ppm	Error %	Status
Zero	1	79	8	7	1.5 /	Pass
Span	239	2341	234	-5	-1.1 ´	Pass

		C	alibration	Drift		
Standard	Initial*	Fi	inal	Difference	Drift	
Gas	ppm	mv	ppm	ppm	% ,	Status
Zero	5	79	8	3	0.7	Pass
Span	232	2341	234	2	0.4	Pass
-	*Bias No. 4					



Number 6

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time: 19:27

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

		Bi	as Resu	lts		
Standard	Cal.	Response	Bias	Difference	Error	
Gas	%	mv	%	%	%	Status
Zero	0.0	8	0.0	0.0	0.0 / /	Pass
Span	10.1	3314	10.0	-0.1	-0.5	Pass
		Cali	bration	Drift		
Standard	Initial*	Fina	al	Difference	Drift	
Gas	%	mv	%	%	% /	/Status
Zero	0.0	8	0.0	0.0	0.0 🗸	Pass
Span	10.0	3314	10.0	0.0	0.0	Pass
•	*Bias No. 5					

CO<sub>2</sub>

Method: EPA 3A Span Conc. 20.3 %

		Bi	as Resu	Its		
Standard	Cal.	Response	Bias	Difference	Error	
Gas	%	mv	%	%	%	Status
Zero	0.0	5	0.0	0.0	0.0	Pass
Span	10.2	4061	10.1	-0.1	-0.5	Pass
	0	Cali	bration	Drift		
Standard	Initial*	Fina	al	Difference	Drift	
Gas	%	mv	%	%	%	Status
Zero	0.0	5	0.0	0.0	0.0 🗸	Pass
Span	10.1	4061	10.1	0.0	0.0	Pass
•	*Bias No. 5	5		-10		

Number 6

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 23 Jun 2021

Start Time: 19:27

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

		Bi	as Resu	ilts	
Standard Gas	Cal. ppm	Response mv	Bias ppm	Difference ppm	Error / Status
Zero	1	70	7	6	1.3 / Pass
Span	239	2397	240	1	0.2 V Pass
		Cali	bration	Drift	

		Ca	libration	Drift		
Standard	Initial*	Fi	nal	Difference	Drift	/
Gas	ppm	mv	ppm	ppm	% /	Status
Zero	8	70	7	-1	-0.2	Pass
Span	234	2397	240	6	1.3 🗸	Pass
•	*Bias No. 5					



Number 7

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time: 21:26

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

		Ві	as Resu	Its	
<b>Standard</b>	Cal.	Response	Bias	Difference	Error
Gas	%	mv	%	%	% Status
Zero	0.0	2	0.0	0.0	0.0 / Pass
Span	10.1	3323	10.0	-0.1	-0.5 Pass
		Cal	ibration	Drift	
<b>Standard</b>	Initial*	Fin	al	Difference	Drift
Gas	%	mv	%	%	% Status
Zero	0.0	2	0.0	0.0	0.0
Span	10.0	3323	10.0	0.0	0.0 V Pass
-	*Bias No. 6	6			

CO<sub>2</sub>

Method: EPA 3A Span Conc. 20.3 %

		Bi	as Resu	its		
Standard	Cal.	Response	Bias	Difference	Error	
Gas	%	mv	%	%	%	Status
Zero	0.0	6	0.0	0.0	0.0	Pass
Span	10.2	4056	10.1	-0.1	-0.5	Pass
		Cali	bration	Drift		
Standard	Initial*	Fina	al	Difference	Drift	
Gas	%	mv	%	%	% ,	Status
Zero	0.0	6	0.0	0.0	0.0	Pass
Span	10.1	4056	10.1	0.0	0.0	Pass
-	*Bias No. 6					/

Number 7

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time: 21:26

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

		Bi	as Resu	lts		
Standard Gas Zero	Cal. ppm 1	Response mv 40	Bias ppm 4	Difference ppm 3	<b>Error</b> % 0.7 /	Status Pass
Span	239	2396	240	1	0.2	Pass
		Cali	bration	Drift		
<b>Standard</b>	Initial*	Fina	al	Difference	Drift	
Standard Gas	Initial* ppm	Fina mv	al ppm		Drift %	Status
				Difference		√ <b>Status</b> ∕Pass



Number 8

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time: 23:05

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

		Bi	as Resu	lts	
Standard	Cal.	Response	Bias	Difference	Error
Gas	%	mv	%	%	% Status
Zero	0.0	8	0.0	0.0	0.0 / Pass
Span	10.1	3341	10.0	-0.1	-0.5 Pass
		Cali	bration	Drift	
Standard	Initial*	Fina	al	Difference	Drift
Gas	%	mv	%	%	% √ Status
Zero	0.0	8	0.0	0.0	0.0 / Pass
Span	10.0	3341	10.0	0.0	0.0 Pass
-	*Bias No. 7	,			

 $CO_2$ 

Method: EPA 3A Span Conc. 20.3 %

		Bi	as Resu	lts		
Standard	Cal.	Response	Bias	Difference	Error	
Gas	%	mv	%	%	% , ,	Status
Zero	0.0	21	0.0	0.0	0.0	Pass
Span	10.2	4100	10.2	0.0	0.0	Pass
		Cali	bration	Drift		
Standard	Initial*	Fina	al	Difference	Drift	
Gas	%	mv	%	%	%	Status
Zero	0.0	21	0.0	0.0	0.0 🗸 /	Pass
Span	10.1	4100	10.2	0.1	0.5	Pass
•	*Bias No. 7	,				7



Number 8

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time: 23:05

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

		Bi	as Resu	its		
Standard Gas Zero	Cal. ppm 1	Response mv 29	Bias ppm 3	Difference ppm 2	<b>Error</b> % 0.4	Status Pass
Span	239	2337	234	-5	-1.1	Pass
		Cali	bration	Drift		
Standard	Initial*	Fina	al	Difference	Drift	
Gas	ppm	mv	ppm	ppm	%	<b>Status</b>
Zero	4	29	3	-1	-0.2	Pass
	240	2337	234	-6	-1.3	Pass

# **CALIBRATION DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time: 08:37

 $O_2$ 

Method: EPA 3A

Calibration Type: Linear Regression

% Zero 10.1 20.2	Calibration Results Cylinder ID - XC013544B CC275468	<b>Result, mv</b> 3 3354 6750	
<b>Slope</b> 333.3	Curve Coefficients Intercept -7	Corr. Coeff. >0.9999	

18 / >0.9999

CO<sub>2</sub> Method: EPA 3A Calibration Type: Linear Regression

5	% Zero 10.2 20.3	Calibration Results Cylinder ID  - XC013544B CC275468	Result, mv 4 4128 8145	
	Slope	Curve Coefficients Intercept	Corr. Coeff.	

401.6



# **CALIBRATION DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time: 08:37

SO<sub>2</sub>

Method: EPA 6C

Calibration Type: Linear Regression

**Curve Coefficients** 

Slope Intercept 10.01 / -5

**Corr. Coeff.** 0.9999

pr/

# **CALIBRATION ERROR DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 23 Jun 2021

Start Time: 08:37

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

**Slope** 333.3

Intercept -6.7

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	3	0.0	0.0	0.0	Pass
10.1	3354	10.1	0.0	0.0	Pass
20.2	6750	20.3	0.1	0.5	Pass

CO<sub>2</sub>

Method: EPA 3A Span Conc. 20.3 %

**Slope** 401.6

Intercept 18.5

Standard         Response mv         Result           Zero         4         0.0           10.2         4128         10.2           20.3         8145         20.2	Difference         Error           %         Status           0.0         0.0         Pass           0.0         0.0         Pass           -0.1         -0.5         Pass
--	--

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

**Slope** 10.01

Intercept -5

Standard ppm	Response mv	Result ppm	Difference ppm	Error	Status
Zero	9	1	1	0.2	Pass
242	2392	239	-3	-0.7	Pass
458	4596	459	1	0.2	Pass

# **METHODS AND ANALYZERS**

Client: New Indy

Project Number: 15730.001.008

Operator: VD

Ope

Date: 23 Jun 2021

Location: Catawba, SC

Source: No. 1 Combination Boiler

File: K:\15730 New Indy\001 Catawba SC\008\Data\210623 New Indy Catawba No. 1 CBb.cem

Program Version: 2.2, built 3 Jul 2020 File Version: 2.04 Computer: WSAUBCHEMLABGC1 Trailer: 281

Analog Input Device: Keithley KUSB-3108

**Channel 1** 

Analyte O<sub>2</sub>

Method EPA 3A, Using Bias Analyzer Make, Model & Serial No. Teledyne T802 s/n: 172

Full-Scale Output, mv
Analyzer Range, %
Span Concentration, %
10000
25.0
20.2

**Channel 2** 

Analyte CO<sub>2</sub>

Method EPA 3A, Using Bias Analyzer Make, Model & Serial No. Teledyne T802 s/n: 172

Full-Scale Output, mv
Analyzer Range, %
Span Concentration, %

1000
1000
25.0
20.3

Channel 5

Analyte SO<sub>2</sub>

Method EPA 6C, Using Bias Analyzer Make, Model & Serial No. Teledyne T100H SN 374

Full-Scale Output, mv
Analyzer Range, ppm
500
Span Concentration, ppm
458





# No. 2 COMBINATION BOILER (CONDITION 1: NCG AND SOG GASES)

New Indy Catawba, SC 15730.001.008 No. 2 Combination Boiler Condition 1: NCGs & SOGs

## **EMISSION CALCULATIONS**

Date Time Began Time Ended	Run 1     Run 2     Run 3     Mean       6/24/21     6/24/21        1445     1630     1806        1545     1730     1906
Volumetric Flow Rate, (Qs), DSCFM BWS % Oxygen Recovery, %	1.57E+05     1.56E+05     1.54E+05     1.56E+05       0.135     0.141     0.148     0.141       13.1     12.7     12.3     12.7       89.5     89.5     89.5     89.5
Sulfur Dioxide MW= 64.06  Concentration, ppm Emission Rate, lb/hr	324.0 327.0 322.0 324.3 508.7 507.2 496.1 504.0
Total Reduced Sulfur (TRS MW)= 34.08  Concentration, ppm Emission Rate, lb/hr	1.13 0.97 0.97 1.02 0.94 0.80 0.80 0.85
H2S (H2S MW)= 34.08 Concentration, ppm Concentration, ppm (Corrected for Recovery) Emission Rate, lb/hr	0.08       0.08       0.08       0.08         0.09       0.09       0.09       0.09         0.07       0.07       0.07       0.07

New Indy Catawba, SC

15730.001.008

No. 2 Combination Boiler

		(	ondition	1: NCGs &	R SOCa
	ISOKINETIC CAL		onantion	1. NCGS C	x SOGS
Run Number		1	2	3	Mean
Date		6/24/21	6/24/21	6/24/21	
Time Began		1445	1630	1806	
Time Ended		1607 🗸	1754	1931	
	INPUT DA	TA			
Sampling Time, min	(Theta)	64.0	64 🗸	64	64
Stack Diameter, in.	(Dia.)	120.00 🗸	120.00	120.00	120.00
Barometric Pressure, in. Hg	(Pb)	29.65 🗸	29.65 🗸	29.65	29.65
Static Pressure, in. H2O	(Pg)	-0.60 🗸	-0.60 🗸	-0.60	-0.60
Pitot Tube Coefficient	(Cp)	0.84	0.84 🗸	0.84	0.84
Meter Correction Factor	(Y)	0.9880 🗸	0.9880 🗸	0.9880 🗸	0.9880
Orifice Calibration Value	(Delta H@)	1.7320 🗸	1.7320 🗸	1.7320 🖊	1.7320
Nozzle Diameter, in.	(Dn)	0.250 🗸	0.250 🗸	0.250	0.250
Meter Volume, ft <sup>3</sup>	(Vm)	42.480 🗸	42.755	42.602	42.612
Meter Temperature, °F	(Tm)	89.8 🗸	95.3 🗸	94.8	93.3
Meter Temperature, °R	(Tm-R)	549.8	555.3	554.8	553.3
Meter Orifice Pressure, in. H2O	(Delta H)	1.300 🗸	1.300 🗸	1.300 🖊	1.300
Ave Sq Rt Orifice Press, (in. H2O)^1/2	((Delta H)½)avg)	1.140 🗸	1.140	1.140 🖊	1.140
Volume H2O Collected, mL	(VIc)	133.3 🗸	138.7 🗸	147.2	139.7
CO2 Concentration, %	(CO2)	6.6 🗸	6.9 🗸	7.3~	6.9
O2 Concentration, %	(O2)	13.1 🗸	12.7 🖊	12.3	12.7
Ave Sq Rt Velo Head, (in. H2O) <sup>1</sup> / <sub>2</sub>	((Delta P)½)avg)	0.907 🗸	0.900 🗸	0.904	0.904
Stack Temperature, °F	(Ts)	475.1 🗸	473.7	479.1	476.0
Stack Temperature, °R	(Ts-R)	935.1	933.7	939.1	936.0
	CALCULATED	DATA			
Nozzle Area, ft <sup>2</sup>	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft <sup>2</sup>	(As)	78.54 🗸	78.54	78.54	78.54
Stack Pressure, in. Hg	(Ps)	29.61	29.61	29.61	29.61
Meter Pressure, in. Hg	(Pm)	29.75	29.75	29.75	29.75
Standard Meter Volume, ft <sup>3</sup>	(Vmstd)	40.054	39.919	39.807	39.927
Standard Water Volume, ft <sup>3</sup>	(Vwstd)	6.274	6.529	6.929	6.577
Moisture Fraction (Measured)	(BWS)	0.135	0.141	0.148	0.141
Moisture Fraction (lower sat/meas)	(BWS)	0.135	0.141	0.148	0.141
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	29.58	29.61	29.66	29.62
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	28.01	27.98	27.93	27.97
Average Stack Gas Velocity, ft/sec	(Vs)	69.18	68.65	69.21	69.01
Stack Gas Flow, actual, ft <sup>3</sup> /min	(Qa)	326023	323490	326155	325223
Stack Gas Flow, Std, ft <sup>3</sup> /min	(Qs)	157429	155507	154485	155807
	\ \-/		.55507	137703	15500/

(Yqa)

0.9922



0.9925

0.992

0.37%

0.9902

Calibration check

Percent difference from Y

Final ST		15730.001.008 Pulp Dryer, #1 Septer Machine, #23 SDS Vs. & #1-2 CBs Footstion Report
cks cow		Scf Ascfm % Isokinetic
SAMME TRANSPORT	1.5	Check C
MADINGER RATT TEMP (PF EXIT TE	49	Thermocouple Check Meter Temp., °F Ref. Temp, °F Ref. Temp, °F Result
		The
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	756	Winter M3A yrite M3A
	251	Min/Max Min/Max Min/Max Ag/67 24/651 Colors by Orsat Fyrite M3A Leak Check, Pre-run Post-run
Amb	63	Avg T <sub>n</sub>
50 00 00 00 00 00 00 00 00 00 00 00 00 0	07 P	Avg Ts, 66 (175, 66) Flue Gas Composition Oxygen, % Carbon Dioxide, % Moisture, %
3 2 6 2 2 8 6 W 6 8 7 2 0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	134,8	Flue Gas Co Oxygen, % Carbon Diox Moisture, %
Console eter Correcter Cor	NN	Avg Jah Avg Jah 1 1 40 2 5 0 G
22	1	3 (3 ANG AH ANG JOH AN
1 2 8 8 8 5 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	79.	vation Avg VAP
New Indy  New Indy  Catawba, SC  2 Combination  Staub outlet  15730.001.000  CLOCK  TIME (Plant time)  HTIL (CL  TIME (Plant time)  15.23  15.23  15.23  15.45  15.42  15.42  15.43	10:01	9
Client Cocation/Plant Source No. 2 Source No	4560	Barometric Pressure is at port elevation  AFSIGN SOLUTIONS, COMP  Egrated Air Services
Client Location/Plant Source No. 2 Sample Location W. O. Number No. O. Number Run Number Date Test Personnel Sample Timewer Point No. O. Number Date TRAVERSE Sample Timewer Fount Sample Time F	ъ 4 я	Barometric Pressure is at port  Society Society Services  Integrated Air Services

											17/11									Pulp Di	15 er # Pad	730.001.008 or Machine,
	Final . 000	COMMENTS																	V <sub>m-std</sub> ,		ated by CC by CC by	& #1-2 CBs sion Report
Page 1 of 1	Checks Initial Oct	SAMPLE TRAIN VACUUM (in Hg)	3	8	2	2,5	3,5	2,5	Zis	5.5	2.5	2.5	2,5	3	2	3	N.	3	Max Vac	ck Q <sub>s</sub> , dscfm % Isokinetic	Calculated by	
Pac	K Fa	IMPINGER EXIT V	64	62	19	64	65	65	19	65 2	63	57	55	53	62	56	55	55	Max Temp 6	Thermocouple Check Meter Temp., °F	Ref. Temp, °FResult	
	Filter II Sample	FILTER EXIT TEMP (°F)																-	Mik/Max	Therm	Ref.	
	16 16 16 16 16 16 16 16 16 16 16 16 16 1	FILTER BOX TEMP (°F)	256	255	256	252	256	252	256	252	255	252	250	250	152	252	152	052	Min/Max 250/257	rite M3A		
	sure* 24. Sure 28. Sain 12.7 Area 78.5.	PROBE TEMP (°F)	252	251	052	252	253	255	254	255	256	257	256	257	256	256	255	1256	25/25	O <sub>2</sub> /CO <sub>2</sub> by Orsat Fyrite M3A Leak Check, Pre-run	Post-run	
oisture	Ambient Temp. 9 Baro. Pressure* 24 Static Pressure 7 Impinger Gain 12 Silica Gel Gain 12 Stack Area 78 Silica Gel Gain 12 Total Traverse Points	DGM OUTET TEMP (°F)	44	49	95	55	95	56	95	96	46	96	45	95	53	96	95	95	1979 25 25	O <sub>2</sub> /CO <sub>2</sub> Leak Che		
EPA 4, Moisture	250   1   1   1   1   1   1   1   1   1	DGW INJ.ÉT ŢĒMP (°F)																	SO AND	ion Po		
Method: EF	6 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	STACK TEMP (°F)	527	hih	473	472	1421	473	h ト ト	h/h	473	<b>カム</b>	hLh	hLh	174	475	h4h	5/11/5	473,689	Flue Gas Composition Oxygen, %	Carbon Dioxide, % Moisture, %	
Meth	PA. ,250	DRY GAS METER READING (#3)	139,7	145.01	145,6	144,2	150.8	153,6	156,2	158,9	161,4	164.3	167,2	169,6	172,4	174,9	1.77	35	42.755	Flue Gas Co Oxygen, %	Carbon Diox Moisture, %	
	Console ID Meter Corr., Y Console △H@ Probe ID/Length Liner Material Pitot ID/Coeff. Thermo ID Nozzle ID/Diams. Avg. Nozzle Diam.	ORIFICE PRESSURE AH (in. H <sub>2</sub> O)	1,3	1.3	1,3	1,3	1,3	1,3	1,3	1,7	1,3	1.3	1.3	1,3	1,3	1.3	1,3	11.3	1 S'I	AVG YAH	16 450G	
		VELOCITY PRESSURE  Δp  (in. H <sub>2</sub> O)	9,40	18:	, 43	177	16.	190	192	. 85	90	173	177	101.	. 85	08	13	39.	Avg VAP 7	2218	ts w NC	
Data	New Indy Catawba, SC No. 2 Combination Boiler Study out let 15730.001.008 2 2 2 6/24/2/ HK Min.	CLOCK TIME (plant time)				94.9	16:51			10,17	17:12			17:28	7.38			17:54			Comments Comments	
ic Field		SAMPLE TIME (min)	3 4	8 8	218	1616	1620 1	1824	2x 28	2432	2436	ab de	hh se	8h 9c	3957	42 5%	45 60	1 1984	*Barometric Pressure is at port elevation		Integrated Air Services	
<b>Isokinetic Field</b>	Client Location/Plant Source Sample Location W. O. Number Run Number Test Personnel Sample Time	TRAVERSE S POINT NO.	¥-1 €	2	8	4	B-1 D	2	3	4	81 H	2	3	4	p-1 B	2	8	4	*Baromet	FWM	Integrated	465

	KS Final S Good	O . Occ	COMMENTS																\	V <sub>m-std</sub> ,	Qs, dscfm	ryer, #3 Pa	15730.001.008 per Machine, & #1-2 CBs ission Report
Page 1 of 1	Factor NA Leak Checks Initial	100 .00 . 800 Run3 W	SAMPLE TRAIN VACUUM (in Hg)	C	Y	R	7	8	8	8	2,5	2.5	2.5	2.5	2,5	2.5	2,5	25	5'8	Max Vac	Hijix.		
	K F Volume, ft <sup>3</sup>		IMPINGER EXIT TEMP (°F)	23	63	19	57	63	57	26	27	65	26	2 6	09	63	19	63	49	Max Temp	Thermocouple Check Meter Temp., °F	Ref. Temp, °F Result	
	"F Hg in. Hg mL H <sub>2</sub> O mL g 147.2	Filter ID Sample ID	FILTER EXIT	/																MinfMax	The	ά.	
	Thorn	78.54 ft <sup>2</sup> nts 16	FILTER BOX TEMP (°F)	251	253	253	252	255	256	256	255	257	258	2.56	256	253	253	452	1255	Min/Max 351/358	-yrite M3A		
	ssure* 26 ssure Gain 13	Poi l	PROBE TEMP (°F)	248	244	250	251	250	250	249	250	252	250	250	251	250	250	249	144	Min/Max	O <sub>2</sub> /CO <sub>2</sub> by Orsat Fyrite M3A Leak Check, Pre-run	Post-run	
EPA 4, Moisture	Ambient Temp. Baro. Pressure* Static Pressure Impinger Gain	otal	OUTET TEMP (°F)	hb	hb	95	53	900	95	53	56	95	hb	99	96	65	16	55	44	Avg T. gvA	O <sub>2</sub> /CO <sub>2</sub> Leak Ch		
EPA 4, N	2 .084	,25c	DGM / DGM / ST INLET	9	2.	476	75	0	18	82	78	b	2	-(	35	8	5	81	1 8	1	sition 'III'	%	
Method:	600 / 100 /	A010, 25, 250, 250	ETER STACK (ft') TEMP (°F)	47	11 9	5	3 4	37 3	8 48	4 48	77 47	147	84 -	3 494	48	7 h	PT4 0	しか	2 H7	Avg Ts	Flue Gas Composition 711 Oxygen, %	Carbon Dioxide, % Moisture, %	
Me	In ID IT., Y IT., Y IT., Y IT., PILL IN IT., PILL IT., PILL IT., Soeff. 1773.		DRY GAS METER READING (#²)	1.281	185,	188.7	16	193,	196	198.	262,7	204.9	201,5	210.	212,7	215,	218.0	220.7	723,4	Total Volume	Flue C	Carb	
	Console ID Meter Corr., Y Console △H@ Probe ID/Length Liner Material Pitot ID/Coeff.	Thermo ID Nozzle ID/Diams. Avg. Nozzle Diam.	ORIFICE PRESSURE AH (in. H <sub>2</sub> O)	1,3	1,3	1,3	1,3	1,3	1.3	1,3	1,3	1,3	1.3	1.3	1,3	1.3	1.3	1,3		Avg AH	Avg VAH	16 250 lg	
	New Indy Catawba, SC 2 Combination Boiler Stuck contex 15730.001.008	24/2/ CC min.	VELOCITY PRESSURE Ap (in. H <sub>2</sub> O)	05.	,84	98:	. 80	88.	, 46	88.	18.	, 42	· 93	.95	01.	英,40	.80	10	02.	ANG VAP	\$28195V	Comments W/ VC	
d Data		44	CLOCK TIME (plant time)				2.	18:28			18:41	18:50			14:00	4.4	19:15		14:31	port elevation	经		
ic Fiel	Client Scation/Plant Source No. Source No. On Number Con Number Run Number	Date sonnel	SAMPLE TIME (min)	カを	8	218	1216	15 20	1874	2138	2432	2136	3040	38 4d		39 52	45.56	4860	4864	*Barometric Pressure is at port elevation		Integrated Air Services	
<b>Isokinetic Field</b>	Client Location/Plant Source Sample Location W. O. Number Run Number	Date Test Personnel Sample Time	TRAVERSE S/ POINT NO.	¥-1€	2	е	4	B-1 D	2	8	4	R-1 D	2	က	4	P-18	2	ო	4	*Barometri	WIE CAN	Integrated	466

# Sample Recovery Field Data

Method: EPA 4, Moisture

Run No. 1   Sample Date   6/24/21   Recovery Date   6/24   24   24   24   24   24   24   24	Total
Sample ID   Y241	Total
Sample ID   Y-4   W   NC6+506   Filter ID   NA   Analyst   ATK	Total
Contents   DI	133,3
Contents   DT   DF   CMP+Y   Silica Gel   Grams   Gr	133,3
Final   945.   171.   643.0   858.1     Initial   898.4   751.2   639.3   895.9     Gain   964   20.2   3.7   120.6   12.7     Impinger Color   Clew   Lable 1?   V   Silica Gel Condition   45ed   Sealed?     Run No.   2	133/3
Initial	133/3
Gain   16.1   20.2   3.7   120.6   12.7     Impinger Color   Clew   Lable 1?   Clew     Silica Gel Condition   45ed   Sealed?     Run No.   2   Sample Date   6/24/21   Recovery Date   6/24/21     Sample ID   Lun 2   NC   NC   Sob   Filter ID   NA   Analyst   Africant     Impingers   Impingers     Contents   740.6   DF   empty   grams     Final   RCH3.3   760.4   657.6   903.4     Initial   647.0   761.5   654.0   4889.7     Gain   162.6   19.4   3   125   13.7	133/3
Impinger Color   Clear   Lable 1?   Sealed?	
Run No.   2   Sample Date   6/24/21   Recovery Date   6/24/21     Sample ID	21
Sample ID   Lyn 2   NC   V   SO   Filter ID   NA   Analyst   ATRIC   Impingers	71
Sample ID   Lyn 2   NC   V   SO   Filter ID   NA   Analyst   ATRIC   Impingers	71
Impingers   Imp. Total   Silica Gel   Contents   749.6   DI   emfty   grams   grams   Final   R213.3   786.9   657.6   903.4   Gain   162.6   19.4   3   125   13.70	4
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
Contents $749.6$ DF $empty$ grams  Final $8713.3$ $786.9$ $657.6$ $903.4$ Initial $647.0$ $761.5$ $659.0$ $889.7$ Gain $162.6$ $19.4$ $3$ $125$ $13.7$	
Final 18213, 3 786, 9 657, 6 903, 903, 903, 903, 903, 903, 903, 903,	Total
Initial 647.0 761.5 654.0 / 889.7 Gain 162.6 / 19.4 / 3 / 125 13.7	
Gain 162.6 / 19.4 / 3 / 125 13.70	
	1387
	V
Silica Gel Condition 45ed Sealed?	
Run No. 3 Sample Date 6/24/2/ Recovery Date 6/2	4/21
Sample ID Run 3 W NCG + SOG Filter ID Analyst At 18	
Impingers  1 2 3 Imp Tatal Silica Cal	
1 2 3 Imp.Total Silica Gel Contents DI emty grams	Total
Final 83015 793.5 646.3 847.3	
Initial 713.3 / 779.5 / 643.0 / 834.6	
Gain 117,2/ 14/ 3.3/ 1345 8.7	
Impinger Color (Lett Labled?	1472
Silica Gel Condition Wed Sealed?	1472

Check COC for Sample IDs of Media Blanks



# Sample and Velocity Traverse Points - Method 1

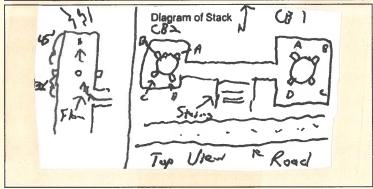
Client	New Indy	Source No. 2 Combination Boiler
Loaction/Plant	Catawba, SC	W.O. Number15730.001.008
Operator	Vb	Date
Duct Type	☑ Circular	☐ Rectangular
Traverse Type	□ Particulate Traverse	✓ Velocity Traverse ☐ Stratification Traverse

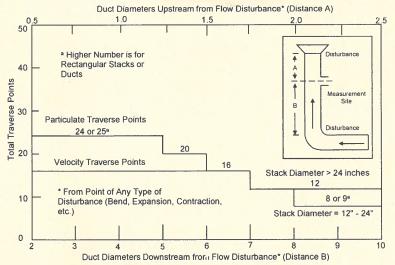
Depth, far wall to outside of port (in) = C	129
Port Depth (in) = D	9
Depth of Duct, diameter (in) = C - D	120
Area of Duct (ft <sup>3</sup> )	78.54
Number of Ports	4
Traverse Points per Port	4
Total Traverse Points	16

Rectangular Ducts Only	
Width of Duct (in)	
Equivalent Diameter (in)	

VIII						
	Teu, en	Distance from	Distance from			
Traverse		Inside Duct	Outside of			
Point	% of Duct	Wall (in)	Port (in)			
1	3.2	3.9	12.9			
2	10.5	12.6	21.6			
3	19.4	23.3	32.3			
4	32.3	38.8	47.8			

Flow Disturbances	
Upstream - A (ft)	45
Downstream - B (ft)	32
Upstream - A (duct diameters)	4.5
Downstream - B (duct diameters)	3.2





Traverse Point Location % of Stack - Circular										r	- 1			
		Number of Traverse Points												
			1	2	3	4	5	6	7	8	9	10	11	12
T		1		14.6		6.7		4.4		3.2		2.6		2.1
r		2		85.4		25.0	Wales	14.6		10.5	100	8.2		8.7
а		3				75.0		29.6	100	19,4		14.6		11.8
V e	L	4				93.3		70.4	遊楼	32.3		22.6		17.7
r	0	5						85.4		67.7		34.2		25.0
s	а	6				4		95.6		80.6		65.8		35.6
е	t	7		=4				17101		89.5		77.4		64.4
P	0	8	0.00							96.8		85.4	10/4	75.0
0	n	9								1111		91.8		82.3
i		10			No.				*			97.4	(1)2	88.2
n		11					1							93.3
1		12							100		200			97.9

				Tra	verse	Poin	t Loc	ation	% of	Stack	- Rec	tangı	ılar	
			Number of Traverse Points											
			1	2	3	4	5	6	7	8	9	10	11	12
T		1	100	25.0	16.7	12.5	10.0	8.3	7,1	6.3	5.6	5.0	4.5	4.2
r		2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
a		3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
V e	L	4		distri	1000	87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
Г	0	5	<b>%</b>				90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
s	a	6		46 112 1	ji D	2	10	91.7	78.6	68.8	61.1	55.0	50.0	45.8
e	t	7		41				NII T	92.9	81.3	72.2	65.0	59.1	54.2
P	0	8				1572	73 E			93.8	83.3	75.0	68.2	62.5
0	n	9			Time		12	ully at			94.4	85.0	77.3	70.8
i	No.	10			(A)					102		95.0	86.4	79.2
n		11	Teally								П		95.5	87.5
L		12									於學			95.8

Rectangular							
Stack	Stack Points						
& M	atrix						
9 -	3 x 3						
12 -	4 x 3						
16 -	4 x 4						
20 -	5 x 4						
25 -	5 x 5						
30 -	6 x 5						
36 -	6 x 6						
42 -	7 x 6						
49 -	7 x 7						

Tape measure ID



Number 1

Client: New Indy

Location: Catawba, NC

Source: #2 Combination Boiler

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

Start Time 14:45 End Time 15:45

Average Measured TRS Conc. Recovery No. 2 TRS Corrected for Recovery 0.94 | 10 | 0.82 ppm 89.5 % 0.92 ppm

R.B. a.



Number 2

Client: New Indy

Location: Catawba, NC

Source: #2 Combination Boiler

Method 16

Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 24 Jun 2021

Start Time 16:30

**End Time 17:30** 

**Average Measured TRS Conc.** Recovery No. 2

**TRS Corrected for Recovery** 

0.68 ppm 89.5 % 0.76 ppm



Number 3

Client: New Indy

Location: Catawba, NC

Source: #2 Combination Boiler

Method 16 Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 24 Jun 2021

Start Time 18:06

**End Time** 19:07

Average Measured TRS Conc. Recovery No. 2 TRS Corrected for Recovery

0.69 ppm 89.5 % 0.77 ppm

Ki3 20V



Number 1

			TRS	mdd	0.91	0.91	0.89	0.91	0.89	0.88	0.88	0.87	0.91	0.93	1.07	1.01	1.07	1.30	1.21	1.01	1.21	1.00	1.23	1.00	1.01
1.008		021		v	0.036	0.036	0.036	0.036	0.036	0.036	0.036		0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	
15730.001.008	ΛD	24 Jun 2021	DMDS	mdd								0.04													
lumber:	Operator:	Date:		area	<2	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	7	<b>~</b>	7	7	<2	<b>~</b>	<b>~</b>	<b>~</b>	<2	<b>~</b>	<2	<b>~</b>	<b>~</b>	7	<2	
Project Number:	ō			v	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	
			DMS	mdd																					
	9	_		area	<2 <	<b>~</b>	<b>~</b>	<b>%</b>	<b>~</b>	<2	<2	<2	<b>~</b>	<b>~</b>	<b>~</b>	<2	<2	<2	<b>~</b>	<2	<b>~</b>	<b>~</b>	7	<2	
	Method: 16	Calibration:		v																					
	Σ	Ca	MeSH	mdd	0.68	99.0	99.0	0.67	0.67	0.65	99.0	0.64	0.67	69.0	0.84	0.78	0.84	1.08	96.0	0.79	0.98	0.78	1.00	0.78	-
				area	29	22	22	28	28	22	26	53	29	62	90	22	90	144	115	79	120	77	124	77	
					0.08	0.10	0.08	0.09	0.08	0.08	0.08	0.08	0.09	0.09	0.08	0.09	0.08	0.08	0.10	0.08	0.08	0.08	0.09	0.08	0.08
		Boiler	H <sub>2</sub> S	v					0.077	0.077	0.077	0.077			0.077		0.077	0.077		0.077		0.077		0.077	
>	a, NC	#2 Combination Boiler	Ĭ	mdd	0.08	0.10	0.08	0.09					0.09	0.09		0.09			0.10		0.08		0.09		
New Indy	Catawba, NC	#2 Com		area	2	က	7	က	7	7	7	<b>~</b>	7	က	<b>%</b>	က	<b>~</b>	<b>~</b>	က	<b>~</b>	7	<b>~</b>	7	<2	
Client:	Location:	Source:		Time	14:45	14:48	14:51	14:54	14:57	15:00	15:03	15:06	15:09	15:12	15:15	15:18	15:21	15:24	15:27	15:30	15:33	15:36	15:39	15:42	Averages

Number 2

			TRS	mdd	0.85	0.79	0.83	0.90	0.95	1.06	0.86	0.79	0.84	0.85	0.89	0.81	0.82	0.82	0.93	0.82	0.89	0.91	0.86	0.86	0.87
1.008		021		V	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036				0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	
15730.001.008	ΛD	24 Jun 2021	DMDS	mdd									0.04	0.05	0.04										
lumber:	Operator:	Date:		area	<2	<b>~</b>	<b>%</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>%</b>	7	4	က	<b>4</b>	<b>~</b>	<2							
Project Number:	ō			V	0.077	0.077		0.077	0.077	0.077		0.077	0.077	0.077		0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	
			DMS	mdd			0.08				0.08				0.09										
	(C)	-		area	<2	<b>~</b>	7	<b>~</b>	7	<b>%</b>	7	<b>%</b>	<b>~</b>	<b>~</b>	က	<b>~</b>	<2	<b>~</b>	<2	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	<2	
	Method: 16	Calibration:		v																					
	Ĭ	Cal	MeSH	mdd	0.63	0.56	0.61	0.67	0.73	0.84	0.63	0.57	0.58	0.58	0.63	0.58	0.59	0.59	0.70	0.59	0.65	69.0	0.63	0.64	
				area	51	4	48	28	89	83	51	42	44	44	52	44	45	46	64	46	54	61	52	53	
					0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.11	0.09	0.08	0.08	0.08	0.08	0.08	0.08	0.10	0.08	0.08	0.08	0.08
		<b>3oiler</b>	Ω.	v	0.077	0.077	0.077	0.077	0.077	0.077		0.077			0.077	0.077	0.077	0.077	0.077	0.077		0.077	0.077	0.077	
>	ı, NC	#2 Combination Boiler	H <sub>2</sub> S	mdd							0.08		0.11	0.09							0.10				
New Indy	Catawba, NC	#2 Com		area	\$	7	7	7	<b>%</b>	%	2	7	4	က	<b>%</b>	7	7	<b>%</b>	7	<b>%</b>	က	<b>%</b>	<b>~</b>	<2	
Client:	Location:	Source:		Time	16:30	16:33	16:36	16:39	16:42	16:45	16:48	16:51	16:54	16:57	17:00	17:03	17:06	17:09	17:12	17:15	17:18	17:21	17:24	17:27	Averages

Number 3

			TRS	mdd	0.91	0.81	0.83	0.86	0.80	0.84	0.83	0.93	0.84	0.84	0.87	1.06	0.95	0.86	0.89	0.88	0.87	0.86	0.86	0.86	0.87
1.008		121		V	0.036	0.036	0.036		0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036		0.036	0.036	0.036	0.036	0.036	
15730.001.008	ΛD	24 Jun 2021	DMDS	ppm				0.04											0.04						
lumber:	Operator:	Date:		area	<b>~</b>	<b>~</b>	<b>~</b>	2	<b>4</b>	<b>~</b>	<b>~</b>	<b>%</b>	<b>%</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>%</b>	<b>~</b>	က	<b>~</b>	<2	<2	7	<2	
Project Number:	Ō			V	0.077	0.077	0.077	0.077	0.077	0.077	0.077		0.077	0.077	0.077	0.077		0.077	0.077	0.077	0.077	0.077	0.077	0.077	
			DMS	mdd								0.08					0.15								
	ဟ	-		area	<2	<b>~</b>	<2	<2	<b>~</b>	<b>~</b>	<2	7	<b>%</b>	<2	<2	<2	7	<b>~</b>	<2	<b>~</b>	<2	<2	<b>~</b>	<2	
	Method: 16	Calibration:		v																					
	Σ	Ca	MeSH	mdd	0.68	0.59	0.59	0.61	0.58	0.62	09.0	69.0	0.62	0.62	0.63	0.83	99.0	0.64	0.65	0.65	0.63	0.63	0.63	0.63	
				area	09	45	45	49	44	49	47	61	20	20	51	88	26	53	22	22	51	52	52	52	
					0.08	0.08	0.09	0.09	0.08	0.08	0.08	0.09	0.08	0.08	0.09	0.08	0.08	0.08	0.08	0.08	0.09	0.08	0.08	0.08	0.08
		Soiler	S.	<b>v</b>	0.077	0.077			0.077	0.077	0.077		0.077	0.077		0.077	0.077	0.077	0.077			0.077	0.077	0.077	
>	a, NC	#2 Combination Boiler	H <sub>2</sub> S	mdd			0.09	0.09				0.09			0.09					0.08	0.09				
New Indy	Catawba, NC	#2 Com		area	<b>∵</b>	7	က	က	7	7	<b>%</b>	က	%	<b>%</b>	က	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	7	က	<b>~</b>	7	<2	
Client:	Location:	Source:		Time	18:06	18:09	18:12	18:15	18:18	18:21	18:25	18:28	18:31	18:34	18:37	18:40	18:43	18:46	18:49	18:52	18:55	18:58	19:01	19:04	Averages

Number 1

Client: New Indy Location: Catawba, NC

Source: #2 Combination Boiler

Method 16 Calibration 1 Project Number: **15730.001.008**Operator: **VD** 

Time	H	I <sub>2</sub> S	Me	SH	D	MS	DN	MDS	TRS
	area	ppm	area	ppm	area	ppm	area	ppm	ppm
14:45	2	0.08	59	0.68	<2	<0.077	<2	< 0.036	0.76
14:48	3	0.10	57	0.66	<2	< 0.077	<2	< 0.036	0.76
14:51	2	0.08	57	0.66	<2	< 0.077	<2	< 0.036	0.74
14:54	3	0.09	58	0.67	<2	< 0.077	<2	< 0.036	0.76
14:57	<2	< 0.077	58	0.67	<2	< 0.077	<2	< 0.036	0.67
15:00	<2	< 0.077	55	0.65	<2	< 0.077	<2	< 0.036	0.65
15:03	<2	< 0.077	56	0.66	<2	< 0.077	<2	< 0.036	0.66
15:06	<2	< 0.077	53	0.64	<2	< 0.077	2	0.04	0.72
15:09	2	0.09	59	0.67	<2	< 0.077	<2	< 0.036	0.76
15:12	3	0.09	62	0.69	<2	< 0.077	<2	< 0.036	0.78
15:15	<2	< 0.077	90	0.84	<2	< 0.077	<2	< 0.036	0.84
15:18	3	0.09	77	0.78	<2	< 0.077	<2	< 0.036	0.86
15:21	<2	< 0.077	90	0.84	<2	< 0.077	<2	< 0.036	0.84
15:24	<2	< 0.077	144	1.08	<2	< 0.077	<2	< 0.036	1.08
15:27	3	0.10	115	0.96	<2	< 0.077	<2	< 0.036	1.06
15:30	<2	< 0.077	79	0.79	<2	< 0.077	<2	< 0.036	0.79
15:33	2	0.08	120	0.98	<2	< 0.077	<2	< 0.036	1.06
15:36	<2	< 0.077	77	0.78	<2	< 0.077	<2	< 0.036	0.78
15:39	2	0.09	124	1.00	<2	< 0.077	<2	< 0.036	1.08
15:42	<2	<0.077	77	0.78	<2	<0.077	<2	<0.036	0.78
Average	)	<0.077		0.77		<0.077		<0.036	<b>0.82</b> <sub>J</sub>



Number 2

Client: New Indy
Location: Catawba, NC
Source: #2 Combination Boiler

Method 16 Calibration 1 Project Number: **15730.001.008**Operator: **VD** 

	H	I <sub>2</sub> S	Me	SH	D	MS	DN	MDS	TRS
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
16:30	<2	<0.077	51	0.63	<2	<0.077	<2	<0.036	0.63
16:33	<2	< 0.077	41	0.56	<2	< 0.077	<2	<0.036	0.56
16:36	<2	< 0.077	48	0.61	2	0.08	<2	< 0.036	0.68
16:39	<2	< 0.077	58	0.67	<2	< 0.077	<2	< 0.036	0.67
16:42	<2	< 0.077	68	0.73	<2	< 0.077	<2	< 0.036	0.73
16:45	<2	< 0.077	89	0.84	<2	< 0.077	<2	< 0.036	0.84
16:48	2	0.08	51	0.63	2	0.08	<2	< 0.036	0.79
16:51	<2	< 0.077	42	0.57	<2	< 0.077	<2	< 0.036	0.57
16:54	4	0.11	44	0.58	<2	< 0.077	2	0.04	0.77
16:57	3	0.09	44	0.58	<2	< 0.077	4	0.05	0.78
17:00	<2	< 0.077	52	0.63	3	0.09	3	0.04	0.81
17:03	<2	< 0.077	44	0.58	<2	< 0.077	<2	< 0.036	0.58
17:06	<2	< 0.077	45	0.59	<2	< 0.077	<2	< 0.036	0.59
17:09	<2	< 0.077	46	0.59	<2	< 0.077	<2	< 0.036	0.59
17:12	<2	< 0.077	64	0.70	<2	< 0.077	<2	< 0.036	0.70
17:15	<2	< 0.077	46	0.59	<2	< 0.077	<2	< 0.036	0.59
17:18	3	0.10	54	0.65	<2	< 0.077	<2	< 0.036	0.75
17:21	<2	< 0.077	61	0.69	<2	< 0.077	<2	< 0.036	0.69
17:24	<2	< 0.077	52	0.63	<2	< 0.077	<2	< 0.036	0.63
17:27	<2	< 0.077	53	0.64	<2	<0.077	<2	<0.036	0.64
Average		<0.077		0.63		<0.077		<0.036	0.68 J



Number 3

Client: New Indy Location: Catawba, NC

Source: #2 Combination Boiler

Method 16 Calibration 1 Project Number: **15730.001.008**Operator: **VD** 

Time	Н	I <sub>2</sub> S	Me	SH	D	MS	DN	MDS	TRS
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
18:06	<2	<0.077	60	0.68	<2	<0.077	<2	<0.036	0.68
18:09	<2	< 0.077	45	0.59	<2	< 0.077	<2	< 0.036	0.59
18:12	3	0.09	45	0.59	<2	< 0.077	<2	< 0.036	0.68
18:15	3	0.09	49	0.61	<2	< 0.077	2	0.04	0.78
18:18	<2	< 0.077	44	0.58	<2	< 0.077	<2	< 0.036	0.58
18:21	<2	< 0.077	49	0.62	<2	< 0.077	<2	< 0.036	0.62
18:25	<2	< 0.077	47	0.60	<2	< 0.077	<2	< 0.036	0.60
18:28	3	0.09	61	0.69	2	0.08	<2	< 0.036	0.86
18:31	<2	< 0.077	50	0.62	<2	< 0.077	<2	< 0.036	0.62
18:34	<2	< 0.077	50	0.62	<2	< 0.077	<2	< 0.036	0.62
18:37	3	0.09	51	0.63	<2	< 0.077	<2	< 0.036	0.72
18:40	<2	< 0.077	88	0.83	<2	< 0.077	<2	< 0.036	0.83
18:43	<2	< 0.077	56	0.66	7	0.15	<2	< 0.036	0.80
18:46	<2	< 0.077	53	0.64	<2	< 0.077	<2	< 0.036	0.64
18:49	<2	< 0.077	55	0.65	<2	< 0.077	3	0.04	0.74
18:52	2	0.08	55	0.65	<2	< 0.077	<2	< 0.036	0.73
18:55	3	0.09	51	0.63	<2	< 0.077	<2	< 0.036	0.72
18:58	<2	< 0.077	52	0.63	<2	< 0.077	<2	< 0.036	0.63
19:01	<2	< 0.077	52	0.63	<2	< 0.077	<2	< 0.036	0.63
19:04	<2	<0.077	52	0.63	<2	<0.077	<2	<0.036	0.63
Average		<0.077		0.64		<0.077		<0.036	0.69





Number 0

Client: New Indy
Location: Catawba, NC Source: #2 Combination Boiler

Method 16 Calibration 1 Project Number: **15730.001.008**Operator: **VD**Date: **25 Jun 2021** 

Time	H <sub>2</sub>	S	Me	SH	D	MS	DN	<b>IDS</b>	TRS
rime	area	ppm	area	ppm	area	ppm	area	ppm	ppm
			C	C416806	7.257pp	m 🗸			
09:05	14217	7.76	<2	< 0.12	<2	< 0.077	<2	< 0.036	7.76
09:08	14648	7.88	<2	<0.12	<2	<0.077	<2	<0.036	7.88
Average		7.82		<0.12		<0.077		<0.036	7.82

# **RECOVERY DATA**

Number 1

Client: New Indy

Location: Catawba, NC

Source: #2 Combination Boiler

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

Before Run 1

Start Time 12:40 **End Time** 12:54

Recovery Gas to Probe, Time 12:40

Peak Areas, mv-sec

12316

12389 12588 Average

ppm 7.23

12431

Recovery Gas to GC, Time 12:50

Peak Areas, mv-sec

15122

15025

15294

Average

ppm

15147 / 8.02

Recovery 90.2% √

# **RECOVERY DATA**

Number 2

Client: New Indy

Location: Catawba, NC

Source: #2 Combination Boiler

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

After Run 3 Before Run 4

Start Time 19:07

**End Time** 19:38

Recovery Gas to Probe, Time 19:07

Peak Areas, mv-sec

11821

11900

11851

Average

11857

**ppm** 7.06

Recovery Gas to GC, Time 19:36

Peak Areas, mv-sec

14397

14822

14833

Average 14684 /

ppm

7.89

Recovery 89.5%

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#### **CALIBRATION DATA**

Number 1

Client: New Indy

Location: Catawba, NC

Project Number: 15730.001.008

Operator: **VD** 

Source: #2 Combination Boiler

Method 16

Ambient	Temperature: 72°C	Barometric P	ressure: 29.25 in. H	łg
Analyte	H₂S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	351	369	477	241
Ret. Time, sec	16.0	22.5	48.0	127.0
4 Flow = 27.6 ml /Min	0.24 ppm	0.94 nnm	42.7 nom	6 42 nnm
1 Flow = 37.6 mL/Min	<b>9.34</b> ppm	9.81 ppm	<b>12.7</b> ppm	<b>6.42</b> ppm
Time: 07:00	10700	Peak Areas		
	19790	9921	31382	38948
	20319	10076	31742	38693
	19852	9986	30214	37936
Average Area	19987	9995	31113 /	38526 /
2 Flow = 82.8 mL/Min	<b>4.24</b> ppm	<b>4.46</b> ppm	<b>5.77</b> ppm	<b>2.92</b> ppm
Time: 11:03		Peak Areas	s, mv-sec	
	4788	2266	7435	8918
	4588	2209	7188	8687
	4419	2218	7198	8791
Average Area	4598	2231 /	7274 /	8798 /
3 Flow = 180 mL/Min	<b>1.95</b> ppm	<b>2.05</b> ppm	<b>2.66</b> ppm	<b>1.34</b> ppm
Time: 11:47		Peak Areas		
	998	492	1607	1968
	985	496	1607	1963
	982	497	1614	1971
Average Area	988	495	1609	1967



# **CALIBRATION SUMMARY**

Number 1

Client: New Indy

Project Number: 15730.001.008

Operator: **VD** 

Location: Catawba, NC
Source: #2 Combination Boiler

Method 16

H₂S	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	9.34	4.24	1.95		
Area, mv-sec	19987 '	4598	988		
Calc. Conc., ppm	9.26	4.31	1.94		
% Error	-0.8	1.6	-0.8		
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9212	2.4433	0.9998	2	0.077
MeSH	1	2	3		
Time	07:00	11:03	11:47	, j. j <del></del>	
Concentration, ppm	9.81	4.46 '	2.05		
Area, mv-sec	9995 ·	2231 '	495		
Calc. Conc., ppm	9.79	4.48	2.05		
% Error	-0.3	0.5	-0.3		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9203	2.0975	>0.9999	2	0.12
DMS	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	12.7	5.77	2.66		
Area, mv-sec	31113	7274	1609 .		
Calc. Conc., ppm	12.6	5.85	2.64		
% Error	-0.7	1.4	-0.7		
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8927	2.4098	0.9999	2	0.077
DMDS	1	2	3		
Time	07:00	11:03	11:47		
Concentration, ppm	6.42	2.92 -	1.34		
Area, mv-sec	38526	8798 -	1967 ´		
Calc. Conc., ppm	6.39	2.94	1.34		
% Error	-0.4	0.8	-0.4		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.9009	3.0543	>0.9999	2	0.036



# **CALIBRATION DATA**

Number 2

Client: New Indy

Project Number: 15730.001.008

Operator: **VD** 

Location: Catawba, NC Source: #2 Combination Boiler

Method 16

Ambient	Temperature: 72°C	Barometric P	ressure: 29.55 in. h	Нg
Analyte	· H <sub>2</sub> S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	348	365	473	239
Ret. Time, sec	16.0	22.5	48.0	127.0
1 Flow = 38.4 mL/Min	<b>9.05</b> ppm	<b>9.51</b> ppm	<b>12.3</b> ppm	<b>6.22</b> ppm
Time: 06:02		Peak Areas		
	18150	9129	29752	37042
	18234	8899	29635	36567
	17949	9072	29588	35648
Average Area	18111	9034	29658 🗸	36419
2 Flow = 86.9 mL/Min	<b>4.00</b> ppm	<b>4.20</b> ppm	<b>5.44</b> ppm	<b>2.75</b> ppm
Time: 08:24	****	Peak Area	s, mv-sec	
	4494	1991	6636	8003
	4478	2048	6673	8033
	4420	2010	6502	8101
Average Area	4464	2016	6604	8046
3 Flow = 191 mL/Min	<b>1.82</b> ppm	<b>1.92</b> ppm	<b>2.48</b> ppm	<b>1.25</b> ppm
Time: 08:49		Peak Area	s, mv-sec	
	1072	443	1449	1837
	1039	453	1513	1835
	1077	449	1476	1874
Average Area	1063	448	1479	1849



# **CALIBRATION SUMMARY**

Number 2

Client: New Indy

Project Number: 15730.001.008

Location: Catawba, NC

Operator: **VD** 

Source: #2 Combination Boiler

Method 16

H₂S	1	2	3		
Time	06:02	08:24	08:49		
Concentration, ppm	9.05 .	4.00	1.82		
Area, mv-sec	18111	4464	1063		
Calc. Conc., ppm	8.97	4.07	1.81		
% Error	-0.8	1.7	-0.9		
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.
	1.7702	2.5709	0.9998	2	0.052
MeSH	1	2	3		
Time	06:02	08:24	08:49		
Concentration, ppm	9.51	4.20	1.92 ·		
Area, mv-sec	9034	2016	448		
Calc. Conc., ppm	9.46	4.25	1.91		
% Error	-0.6	1.1	-0.6		
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.
	1.8751	2.1261	0.9999	2	0.11
DMS	1	2	3		
ime	06:02	08:24	08:49		
Concentration, ppm	12.3	5.44	2.48 ·		
Area, mv-sec	29658	6604	1479		
Calc. Conc., ppm	12.2	5.49	2.47		
% Error	-0.5	1.0	-0.5		
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8718	2.4355	0.9999	2	0.072
DMDS	1	2	3		
Time	06:02	08:24	08:49		
Concentration, ppm	6.22	2.75	1.25		
Area, mv-sec	36419	8046	1849		
Calc. Conc., ppm	6.21	2.76	1.25		
% Error	-0.2	0.4	-0.2		
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.
	1.8610	3.0854	>0.9999	2	0.032



#### **ANALYTES AND STANDARDS**

Client: New Indy Project Number: 15730.001.008

Location: Catawba, NC Operator: VD

Source: #2 Combination Boiler Method 16 Date: 23 Jun 2021

Analyte Molecular Weight	<b>H<sub>2</sub>S</b> 34.08	<b>MeSH</b> 48.11	<b>DMS</b> 62.14	<b>DMDS</b> 94.20
Retention Time, sec	16.0	22.5	48.0	127.0
Peak Detection Window, sec	3.0	7.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	2.0	3.0
Ending Peak Width, sec	2.0	6.0	4.0	5.0
Permeation Device ID	T-51828	33-53274	89-53332	89-53266/
Permeation Rate, ng/min	483 🗸	716	1197 🖊	918
Permeation Rate, nL/min*	348	365	473	239

Barometric Pressure: 29.55 in. Hg Ambient Temperature: 72 °F

No Oxygen Correction

\*Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min. Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

 $PR_{nl} = PR_{ng} x (V_{mol} / W_{mol}) x [(460^{\circ} + T_a) / T_s] x (P_s / P_b)$ 

Where:

PR<sub>nl</sub> = Permeation Rate by volume, nL/minPR<sub>ng</sub> = Permeation Rate by weight, ng/min

V<sub>mol</sub> = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

 $\mathbf{W}_{mol}$  = Molecular Weight of compound

T<sub>a</sub> = Ambient Temperature, °F

T<sub>s</sub> = Standard Temperature = 492°R (32 °F)

P<sub>s</sub> = Standard Pressure = 29.92 in Hg

P<sub>b</sub> = Barometric Pressure, in Hg

For example, H<sub>2</sub>S:

 $PR_{nl} = 483 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.55)$ 

= 348 nL/min

To calclate concentrations:

 $C = PR_{nl} / F_{d}$ 

Where:

**C** = Concentration, ppmv

**PR**<sub>nl</sub> = Permeation Rate by volume, nL/min

**F**<sub>d</sub> = Flow rate of diluent, mL/min

#### **INSTRUMENT INFORMATION**

Client: New Indy Project Number: 15730.001.008

Location: Catawba, NC Operator: VD

Source: #2 Combination Boiler Method 16 Date: 23 Jun 2021

File: C:\Data\210624 New Indy Catawba No. 2 CB.trs

Program Version: 2.0, built 15 May 2017 File Version: 2.0

Computer: WLT5 Trailer: 281

Analog Input Device: MCC USB-1608G GC Channel: 16

Sampling Rate: 0.050 sec. Data Interval: 0.5 sec.

Gas Chromatograph: Shimadzu GC8-A Serial No. C10493615061

**Detector Range: 10** 

	Gases		Temperatures, °C	Columns
	Press. psi	Flow mL/min	Column: 140	Primary: Carbopack
$H_2$	30	50	Detector: 140	Secondary: N/A
Air	30	60		Sample Loop: 4"
Carrier	50	30		

#### **Injection Cycle**

Total Length: 180 sec Sampling Time: 170 sec Load/Backflush Time: 80 sec

#### **Default Integration Parameters**

Signal Threshold 0.67 mv Peak detection window ±10 sec Minimum peak area 2 mv-sec Minimum peak height 1 mv above baseline

#### **Dynacalibrator**

Chamber Temperature 50.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.55 in. Hg

Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

	O <sub>2</sub>	CO <sub>2</sub>	SO <sub>2</sub>
Method	EPA 3A	EPA 3A	EPA 6C
Conc. Units	%	%	ppm

Time: 14:45 to 15:45

#### **Run Averages**

13.0

6.6

320

#### Pre-run Bias at 14:36

Zero Bias	0.1	0.0	4
Span Bias	10.1	10.2	242
Span Gas	10.1	10.2	242

#### Post-run Bias at 15:50

Zero Bias	0.0	0.0	4
Span Bias	10.1	10.2	239
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

13.1 / 6.6 / 324 /



Number 2

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

	CO <sub>2</sub> EPA 3A %	<b>O</b> <sub>2</sub> EPA 3A %	Method Conc. Units
--	--------------------------------	--------------------------------------	-----------------------

Time: 16:30 to 17:30

#### **Run Averages**

12.6

6.9

324

#### Pre-run Bias at 15:50

Zero Bias	0.0	0.0	4
Span Bias	10.1	10.2	239
Span Gas	10.1	10.2	242

#### Post-run Bias at 17:33

Zero Bias	0.1	0.0	7
Span Bias	10.1	10.1	244
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

12.7 / 6.9 / 327 /



Number 3

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

O <sub>2</sub> CO <sub>2</sub> Method EPA 3A EPA 3A  Conc. Units % %	<b>SO₂</b> EPA 6C ppm
--	-----------------------------

Time: 18:06 to 19:06

#### **Run Averages**

12.2 7.3 321

#### Pre-run Bias at 17:33

Zero Bias	0.1	0.0	7
Span Bias	10.1	10.1	244
Span Gas	10.1	10.2	242

#### Post-run Bias at 19:08

Zero Bias	0.1	0.0	5
Span Bias	10.1	10.2	241
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

12.3 / 7.3 / 322 /



Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Time

Calibration 1

CO<sub>2</sub>

mv

%

 $O_2$ 

mv

%

Project Number: 15730.001.008

Operator: VD

SO<sub>2</sub>

mv

ppm

						PP	
	١	Vith NO	CGs & S	OGs			
Traversed					f duct di	ameter	
			oint 1				
14:46	4108	12.4	2996	7.5	3011	300	
14:47	4097	12.3	2991	7.4	3017	300	
14:48	3977	12.0	3028	7.5	3055	304	
14:49	3987	12.0	3156	7.9	3085	307	
14:50	3979	12.0	3132	7.8	3072	306	
14:51	3980	12.0	3149	7.8	2913	290	
14:52	4083	12.3	3137	7.8	2875	286	
14:53	4206	12.7	3007	7.5	2930	292	
14:54	4236	12.8		7.2	3006	299	
14:55	4218	12.7	2850	7.1	3073	306	
14:56	4370	13.2	2810	7.0	3033	302	
14:57	4368	13.1	2667	6.6	3136	312	
14:58	4294	12.9	2672	6.6	3154	314	
14:59	4319	13.0		6.8	3132	312	
15:00	4296	12.9		6.8	3223	321	
15:01	4316						
15:02	4381	13.2		6.7			
15:03	4185	12.6		6.7	3173	316	
15:04	4069	12.3		7.2	2984	297	
15:05	4041	12.2		7.5	3041	303	
			oint 2				
15:06	4040	12.2	3033	7.5	3076	306	
15:07	4140	12.5		7.5	3038	303	
15:08	4235	12.7		7.2	3046	303	
15:09	4259	12.8		6.9	3069	306	
15:10	4355	13.1		6.8	3154		
15:11	4384	13.2		6.6	3311	330	
15:12	4466	13.4		6.5	3337	332	
15:13	4555	13.7	2489	6.2	3276	326	
15:14	4534	13.6	2410	6.0	3205	319	
15:15	4491	13.5	2421	6.0	3145	313	
15:16	4454	13.4	2451	6.1	3196	318	
15:17	4454	13.4	2500	6.2	3166	315	
15:18	4342	13.1	2515	6.2	3281	327	
15:19	4342	13.1	2624	6.5	3244	323	
15:20	4463	13.4	2612	6.5	3261	325	
15:21	4483	13.5	2474	6.1	3373	336	
15:22	4487	13.5	2458	6.1	3366	335	

Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

	O <sub>2</sub>		CO <sub>2</sub> S		SO	SO <sub>2</sub>	
Time	mv	%	mv	%	mv	ppm	
15:23	4539	13.7	2438	6.1	3201	319	
15:24	4574	13.8	2381	5.9	3191	318	
15:25	4521	13.6	2354	5.8	3329	332	
		P	oint 3				
15:26	4507	13.6	2413	6.0	3346	333	
15:27	4454	13.4	2435	6.0	3376	336	
15:28	4416	13.3	2485	6.2	3524	351	
15:29	4404	13.3	2539	6.3	3496	348	
15:30	4461	13.4	2540	6.3	3423	341	
15:31	4560	13.7	2475	6.1	3252	324	
15:32	4510	13.6	2370	5.9	3272	326	
15:33	4479	13.5	2425	6.0	3328	332	
15:34	4431	13.3	2459	6.1	3328	332	
15:35	4429	13.3	2519	6.3	3325	331	
15:36	4361	13.1	2540	6.3	3347	333	
15:37	4435	13.3	2573	6.4	3340	333	
15:38	4422	13.3	2527	6.3	3372	336	
15:39	4476	13.5	2509	6.2	3481	347	
15:40	4464	13.4	2455	6.1	3535	352	
15:41	4395	13.2	2494	6.2	3451	344	
15:42	4358	13.1	2563	6.4	3253	324	
15:43	4318	13.0	2598	6.5	3260	325	
15:44	4310	13.0	2647	6.6	3270	326	
15:45	4298	12.9	2666	6.6	3261	325	
Avgs	4335	13.0	2668	6.6	3214	320	

Number 2

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Time

Calibration 1

mv

 $O_2$ 

mv

%

CO<sub>2</sub>

%

Project Number: 15730.001.008

Operator: **VD** 

SO<sub>2</sub>

ppm

mv

With NCGs & SOGs Traversed @ 16.6%, 50.0%, & 83.3% of duct diameter										
		P	oint 1							
16:31	4171	12.6	2672	6.6	3216	320				
16:32	4119	12.4	2788	6.9	3200	319				
16:33	4126	12.4	2856	7.1	3255	324				
16:34	4203	12.7	2842	7.1	3239	323				
16:35	4294	12.9	2741	6.8	3356	334				
16:36	4374	13.2	2640	6.6	3431	342				
16:37	4326	13.0	2566	6.4	3322	331				
16:38	4338	13.1	2604	6.5	3146	313				
16:39	4312	13.0	2606	6.5	3257	324				
16:40	4358	13.1	2614	6.5	3196	318				
16:41	4456	13.4	2562	6.4	3256	324				
16:42	4497	13.5	2454	6.1	3263	325				
16:43	4433	13.3	2410	6.0	3234	322				
16:44	4408	13.3	2484	6.2	3253	324				
16:45	4381	13.2	2513	6.2	3261	325				
16:46	4286	12.9	2558	6.4	3171	316				
16:47	4296	12.9	2654	6.6	3252	324				
16:48	4265	12.8	2651	6.6	3433	342				
16:49	4108	12.4	2702	6.7	3304	329				
16:50	4012	12.1	2875	7.2	3162	315				
		P	oint 2							
16:51	4020	12.1	2971	7.4	3150	314				
16:52	4040	12.2	2975	7.4	3140	313				
16:53	4117	12.4	2932	7.3	3064	305				
16:54	4169	12.6	2860	7.1	3134	312				
16:55	4080	12.3	2812	7.0	3235	322				
16:56	4024	12.1	2918	7.3	3268	326				
16:57	4039	12.2	2965	7.4	3366	335				
16:58	4118	12.4	2933	7.3	3460	345				
16:59	4178	12.6	2843	7.1	3359	335				
17:00	4081	12.3	2796	7.0	3239	323				
17:01	4041	12.2	2911	7.2	3179	317				
17:02	4127	12.4	2921	7.3	3164	315				
17:03	4118	12.4	2865	7.1	3219	321				
17:04	4162	12.5	2847	7.1	3337	332				
17:05	4157	12.5	2814	7.0	3355	334				
17:06	4228	12.7	2798	7.0	3420	341				
17:07	4265	12.8	2722	6.8	3258	325				

# **RUN DATA** Number 2

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

T:	C	)2	C	$O_2$	S	$O_2$
Time	mv	%	mv	%	mv	ppm
17:08	3 4049	12.2	2716	6.8	3091	308
17:09	3988	12.0	2952	7.3	3184	317
17:10	4218	12.7	2989	7.4	3145	313
		F	Point 3			
17:11	4304	13.0	2738	6.8	3235	322
17:12	4144	12.5	2669	6.6	3288	328
17:13	3 4077	12.3	2848	7.1	3181	317
17:14	4102	12.3	2902	7.2	3201	319
17:15	4152	12.5	2887	7.2	3242	323
17:16	4200	12.6	2827	7.0	3326	331
17:17	4233	12.7	2760	6.9	3407	339
17:18	3 4267	12.8	2729	6.8	3435	342
17:19	4334	13.0	2703	6.7	3244	323
17:20	4262	12.8	2622	6.5	3225	321
17:21	4237	12.8	2700	6.7	3205	319
17:22	4242	12.8	2722	6.8	3095	308
17:23	3 4205	12.7	2711	6.7	3211	320
17:24	4237	12.8	2762	6.9	3277	326
17:25	4220	12.7	2727	6.8	3322	331
17:26	4226	12.7	2731	6.8	3456	344
17:27	4112	12.4	2751	6.8	3471	346
17:28	3963	11.9	2895	7.2	3258	325
17:29	4087	12.3	3036	7.6	3187	317
17:30	4290	12.9	2875	7.2	3147	313
Avgs	4198	12.6	2765	6.9	3256	324

Number 3

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

T:	C	)2	CC	$O_2$	S	$O_2$	
Time	mv	%	mv	%	mv	ppm	 
		With NO	CGs & S	OGs			
Traverse	ed @ 16.6	<b>5%, 50.</b> 0	0%, & 83	3.3% of	f duct di	iameter	
		P	oint 1				
18:07	4211	12.7	2670	6.6	3226	321	
18:08	4167	12.5	2744	6.8	3287	327	
18:09	4135	12.4	2791	6.9	3381	337	
18:10	4078	12.3	2850	7.1	3388	337	
18:11	4130	12.4	2872	7.1	3358	334	
18:12	4218	12.7	2826	7.0	3176	316	
18:13	4226	12.7	2731	6.8	3113	310	
18:14	4187	12.6	2729	6.8	3126	311	
18:15	4179	12.6	2764	6.9	3202	319	
18:16	4163	12.5	2782	6.9	3191	318	
18:17	4074	12.3	2813	7.0	3218	321	
18:18	4040	12.2	2921	7.3	3165	315	
18:19	4079	12.3	2945	7.3	3147	313	
18:20	4099	12.3	2894	7.2	3166	315	
18:21	4158	12.5	2880	7.2	3209	320	
18:22		11.9	2856	7.1	3328	332	
18:23		11.8	3056	7.6	3281	327	
18:24		11.8	3091	7.7	3245	323	
18:25		12.1	3120	7.8	3123	311	
18:26	4117	12.4	2988	7.4	3047	303	
			Point 2				
18:27		12.8	2825	7.0	3183	317	
18:28		12.4	2734	6.8	3203	319	
18:29		12.2	2845	7.1	3200	319	
18:30		12.1	2964	7.4	3329	332	
18:31	3939	11.9	2995	7.5	3416	340	
18:32		11.8	3074	7.7	3363	335	
18:33		11.9	3072	7.6	3140	313	
18:34		11.9	3065	7.6	3141	313	
18:35		12.0	3043	7.6	3144	313	
18:36		12.2	2988	7.4	3136	312	
18:37		12.2	2952	7.3	3166	315	
18:38		12.6	2911	7.2	3147	313	
18:39		12.9	2765	6.9	3269	326	
18:40		12.4	2684	6.7	3425	341	
18:41		12.3	2854	7.1	3408	339	
18:42		12.3	2908	7.2	3243	323	
18:43	3982	12.0	2920	7.3	3143	313	

Number 3

Client: New Indy Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Time	mv C	%	C(	O <sub>2</sub> %	S(	<b>D</b> ₂ ppm	
18:44	3985	12.0	3017	7.5	3084	307	
18:45	3917	11.8	3024	7.5	3169	316	
18:46	3920	11.8	3099	7.7	3200	319	
		F	Point 3				
18:47	4006	12.1	3072	7.6	3196	318	
18:48	4096	12.3	2981	7.4	3334	332	
18:49	4079	12.3	2899	7.2	3367	335	
18:50	4091	12.3	2902	7.2	3216	320	
18:51	4122	12.4	2900	7.2	3076	306	
18:52	4122	12.4	2859	7.1	3144	313	
18:53	4039	12.2	2873	7.1	3157	314	
18:54	4078	12.3	2937	7.3	3167	315	
18:55	3970	12.0	2928	7.3	3206	319	
18:56	3924	11.8	3051	7.6	3177	316	
18:57	4012	12.1	3077	7.7	3221	321	
18:58	3967	11.9	2999	7.5	3408	339	
18:59	3991	12.0	3032	7.5	3252	324	
19:00	4119	12.4	2983	7.4	3119	311	
19:01	4028	12.1	2885	7.2	3113	310	
19:02	4042	12.2	2965	7.4	3084	307	
19:03	3997	12.0	2966	7.4	3159	315	
19:04	3963	11.9	3000	7.5	3214	320	
19:04	3951	11.9	3036	7.6	3345	333	
19:06	3958		3065		3360	335	
		11.9		7.6			
Avgs	4058	12.2	2925	7.3	3220	321	

# **BIAS**Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 24 Jun 2021

Start Time: 09:56

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

	Bias Results									
Status	Error %	Difference %	Bias %	Response mv	Cal. %	Standard Gas				
Pass Pass	0.5	0.1	0.1	22	0.0	Zero				
,	0.5	0.1 0.0	0.1 10.1	3355	0.0 10.1	Zero Span				

CO₂ Method: EPA 3A

Span Conc. 20.3 %

Bias Results								
Standard	Cal.	Response	Bias	Difference	Error			
Gas	%	mv	%	%	% / /	Status		
Zero	-0.1	35	0.0	0.1	0.5 /	Pass		
Span	10.3	4075	10.2	-0.1	-0.5	Pass		

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

Bias Results									
Standard	Cal.	Response	Bias	Difference	Error				
Gas	ppm	mv	ppm	ppm	% /	Status			
Zero	-1	2	0	1	0.2 🗸	Pass			
Span	244	2376	237	-7	-1.5 🗸	Pass			

Number 2

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

Start Time: 14:36

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

		Bi	as Resu	Its		
Standard	Cal.	Response	Bias	Difference	Error	
Gas	%	mv	%	%	%	Status
Zero	0.0	37	0.1	0.1	0.5	Pass
Span	10.1	3339	10.1	0.0	0.0	Pass
		Cali	bration	Drift		
<b>Standard</b>	Initial*	Fina	al	Difference	Drift	
Gas	%	mv	%	%	% //	Status
Zero	0.1	37	0.1	0.0	0.0	Pass
Span	10.1	3339	10.1	0.0	0.0	Pass
-	*Bias No. 1					

 $CO_2$ 

Method: EPA 3A Span Conc. 20.3 %

Bias Results										
Standard	Cal.	Response	Bias	Difference	Error					
Gas	%	mv	%	%	%	Status				
Zero	-0.1	21	0.0	0.1	0.5 /	Pass				
Span	10.3	4072	10.2	-0.1	-0.5	Pass				
	Calibration Drift									
Standard	Initial*	Fina	al	Difference	Drift					
Gas	%	mv	%	%	% /	Status				
Zero	0.0	21	0.0	0.0	0.0	Pass				
Span	10.2	4072	10.2	0.0	0.0	Pass				
•	*Bias No.	1								

Number 2

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

Start Time: 14:36

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

		Bi	as Resu	Its	
Standard Gas	Cal. ppm	Response mv 43	Bias ppm	Difference ppm 5	Error  % / Status  1.1 / Pass
Zero Span	244	2432	4 242	-2	-0.4 Pass
		Cali	bration	Drift	
<b>Standard</b>	Initial*	Fina	al	Difference	Drift /
Gas	ppm	mv	ppm	ppm	% / Status
Zero	0	43	4	4	0.9 / Pass



Number 3

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

Start Time: 15:50

Calibration 1

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

		Bi	as Resu	lts		
Standard	Cal.	Response	Bias	Difference	Error	
Gas	%	mv	%	%	%	Status
Zero	0.0	3	0.0	0.0	0.0 🗸	Pass
Span	10.1	3340	10.1	0.0	0.0	Pass
		Cali	bration	Drift		
Standard	Initial*	Fina	al	<b>Difference</b>	Drift	
Gas	%	mv	%	%	% /	Status
Zero	0.1	3	0.0	-0.1	-0.5	Pass
Span	10.1	3340	10.1	0.0	0.0	Pass
-	*Bias No. 2					

 $CO_2$ 

Method: EPA 3A Span Conc. 20.3 %

Bias Results										
Standard	Cal.	Response	Bias	Difference	Error					
Gas	%	mv	%	%	%	Status				
Zero	-0.1	6	0.0	0.1	0.5 🗸	Pass				
Span	10.3	4078	10.2	-0.1	-0.5	Pass				
Calibration Drift										
Standard	Initial*	Fina	al	Difference	Drift					
Gas	%	mv	%	%	% /	Status				
Zero	0.0	6	0.0	0.0	0.0	Pass				
Span	10.2	4078	10.2	0.0	0.0	Pass				
	*Bias No. 2	2		- 100 - 100		1				

Number 3

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

Start Time: 15:50

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

		Bi	as Resu	lts	
Standard Gas Zero	Cal. ppm -1	Response mv 48	Bias ppm 4	Difference ppm 5	Error  % Status  1.1 Pass
Span	244	2402	239	-5	-1.1 / Pass
		Cali	bration	Drift	
Standard	Initial*	Fina	al	Difference	Drift /
Gas	ppm	mv	ppm	ppm	% / Status
Zero	4	48	4	0	0.0 / Pass
	242	2402	239	-3	-0.7 Pass





Number 4

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

Start Time: 17:33

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

		Bi	as Resu	Its	
Standard	Cal.	Response	Bias	<b>Difference</b>	Error
Gas	%	mv	%	%	% Status
Zero	0.0	16	0.1	0.1	0.5 Pass
Span	10.1	3338	10.1	0.0	0.0 Pass
		Cali	bration	Drift	
<b>Standard</b>	Initial*	Fina	al	<b>Difference</b>	Drift
Gas	%	mv	%	%	% / Status
Zero	0.0	16	0.1	0.1	0.5 / Pass
Span	10.1	3338	10.1	0.0	0.0 Pass
•	*Bias No. 3	2			

CO<sub>2</sub>

Method: EPA 3A Span Conc. 20.3 %

			as Resu		_	
Standard	Cal.	Response	Bias	Difference	Error	
Gas	%	mv	%	%	%	Status
Zero	-0.1	6	0.0	0.1	0.5 🗸	Pass
Span	10.3	4045	10.1	-0.2	-1.0	Pass
		Cal	ibration	Drift		
Standard	Initial*	Fin	al	Difference	Drift	
Gas	%	mv	%	%	%	Status
Zero	0.0	6	0.0	0.0	0.0 🗸	Pass
Span	10.2	4045	10.1	-0.1	-0.5	Pass
•	*Bias No. 3				-	



Number 4

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

Start Time: 17:33

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

		Bi	as Resu	Its	
Standard	Cal.	Response	Bias	Difference	Error
Gas	ppm	mv	ppm	ppm	% Status
Zero	-1	77	7	8	1.7 / / Pass
Span	244	2447	244	0	0.0 Pass
		Cali	bration	Drift	
Standard	Initial*	Fina	al	Difference	Drift
Gas	ppm	mv	ppm	ppm	% / Status
Zero	4	77	7	3	0.7 / Pass
Span	239	2447	244	5	1.1 √ Pass
-	*Bias No. 3	3			



Number 5

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

Start Time: 19:08

Calibration 1

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

		Bi	as Resu	Its		
Standard	Cal.	Response	Bias	Difference	Error	
Gas	%	mv	%	%	%	Status
Zero	0.0	16	0.1	0.1	0.5 🗸 /	Pass
Span	10.1	3349	10.1	0.0	0.0	Pass
		Cali	bration	Drift		
Standard	Initial*	Fina	al	<b>Difference</b>	Drift	
Gas	%	mv	%	%	% //	Status
Zero	0.1	16	0.1	0.0	0.0	Pass
Span	10.1	3349	10.1	0.0	0.0	Pass
-	*Bias No. 4	L				

 $CO_2$ 

Method: EPA 3A Span Conc. 20.3 %

Bias Results							
Standard Gas	Cal. %	Response mv	Bias %	Difference %	Error %	Status	
Zero	-0.1	6	0.0	0.1	0.5	Pass	
Span	10.3	4104	10.2	-0.1	-0.5	Pass	
		Cali	bration	Drift			
Standard	Initial*	Fina	al	Difference	Drift		
Gas	%	mv	%	%	%	Status	
Zero	0.0	6	0.0	0.0	0.0	Pass	
Span	10.1	4104	10.2	0.1	0.5	Pass	
-	*Bias No. 4						





Number 5

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

Start Time: 19:08

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

		Bi	as Resu	lts		
Standard Gas Zero	Cal. ppm -1	Response mv 50	Bias ppm 5	Difference ppm 6	Error % 1.3 -0.7	Status Pass Pass
Span	244		241 ibration			- ass
Standard Gas	Initial* ppm	Fina mv	ppm	Difference ppm	Drift %	Status
Zero Span	244 *Bias No. 4	50 2418	5 241	-2 -3	-0.4 -0.7	Pass Pass



#### **CALIBRATION DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

Start Time: 09:44

 $O_2$ 

Method: EPA 3A

Calibration Type: Linear Regression

%

Calibration Results	
Cylinder ID	Result, mv
-	-2

Zero - -2 10.1 XC013544B 3348 20.2 CC275468 6739

**Curve Coefficients** 

Method: EPA 3A

Calibration Type: Linear Regression

Ca	alıbı	ratio	n	Results	

 %
 Cylinder ID
 Result, mv

 Zero
 4

 10.2 /
 XC013544B
 4116

 20.3 /
 CC275468
 8080

**Curve Coefficients** 

Slope | Intercept | Corr. Coeff. | >0.9999 |





### **CALIBRATION DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

Start Time: 09:44

SO<sub>2</sub>

Method: EPA 6C

Calibration Type: Linear Regression

ppm Zero

	Calibration Results	
	Cylinder ID	Result, mv
	-	-5
1	00004540	0.450

242 / CC234516 2450 458 EB0108003 4587

**Curve Coefficients** 

Slope Intercept Corr. Coeff. >0.9999





#### **CALIBRATION ERROR DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 24 Jun 2021

Start Time: 09:44

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

**Slope** 333.1

Intercept -11.0

Standard % Zero 10.1 20.2	Response mv -2 3348 6739	Result % 0.0 10.1 20.3	<b>Difference</b> % 0.0 0.0 0.0 0.1	Error % 0.0 0.0 0.5	Status Pass Pass Pass	
---------------------------------------	--------------------------------------	------------------------------------	-------------------------------------	---------------------------------	--------------------------------	--

CO<sub>2</sub>

Method: EPA 3A Span Conc. 20.3 %

**Slope** 398.4

Intercept 25.3

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	4	-0.1	-0.1	-0.5	Pass
10.2	4116	10.3	0.1	0.5	Pass
20.3	8080	20.2	-0.1	-0.5	Pass

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

**Slope** 10.03

Intercept 3

Standard ppm Zero 242	Response mv -5 2450	Result ppm -1 244	Difference ppm -1 2 -1	Error % / -0.2 / 0.4 /	Status Pass Pass Pass
458	4587	457	-1	-0.2	Pass

#### **METHODS AND ANALYZERS**

Client: New Indy Project Number: 15730.001.008

Location: Catawba, SC Operator: VD

Source: No. 2 Combination Boiler Date: 24 Jun 2021

File: C:\Data\210624 New Indy Catawba No. 2 CB.cem
Program Version: 2.2, built 3 Jul 2020 File Version: 2.04
Computer: WSAUBCHEMLABGC1 Trailer: 281

Analog Input Device: Keithley KUSB-3108

#### **Channel 1**

Analyte
Method
Analyzer Make, Model & Serial No.
Full-Scale Output, mv
Analyzer Range, %
Span Concentration, %

O2
EPA 3A, Using Bias
Teledyne T802 s/n: 172
10000
25.0
20.2

#### Channel 2

Analyte CO2
Method EPA 3A, Using Bias
Analyzer Make, Model & Serial No.
Full-Scale Output, mv 10000
Analyzer Range, % 25.0
Span Concentration, % 20.3

#### Channel 5

Analyte SO<sub>2</sub>
Method EPA 6C, Using Bias
Analyzer Make, Model & Serial No.
Full-Scale Output, mv 10000
Analyzer Range, ppm 500
Span Concentration, ppm 458





# No. 2 Combination Boiler (Condition 2: NCG Gases Only)

New Indy Catawba, SC 15730.001.008 No. 2 Combination Boiler Condition 2: NCGs Only

#### **EMISSION CALCULATIONS**

Date Time Began Time Ended	Run 1 Run 2 Run 3 Mean 6/25/21 6/25/21 6/25/21 1000 1135 1315 1100 1235 1415
Volumetric Flow Rate, (Qs), DSCFM BWS % Oxygen Recovery, %	1.56E+05
Sulfur Dioxide MW= 64.06  Concentration, ppm Emission Rate, lb/hr	247.0 245.0 235.0 242.3 383.2 380.0 366.2 376.4
Total Reduced Sulfur (TRS MW)= 34.08  Concentration, ppm Emission Rate, lb/hr	1.22
H2S (H2S MW)= 34.08  Concentration, ppm Concentration, ppm (Corrected for Recovery) Emission Rate, lb/hr	0.05       0.05       0.05       0.05         0.05       0.05       0.05       0.05         0.04       0.04       0.04       0.04



New Indy Catawba, SC 15730.001.008 No. 2 Combination Boiler

# **Condition 2: NCGs Only**

ISOKINETIC	CALCUL	ATIONS

	ISOKINETIC CALC				2.4
Run Number		1	2	3	Mean
Date		6/25/21	6/25/21	6/25/21	
Time Began		1000 🗸	1135	1315	
Time Ended		1124 🗸	1259	1441	
	INPUT DAT				
Sampling Time, min	(Theta)	64.0	64	64	64
Stack Diameter, in.	(Dia.)	120.00	120.00	120.00	120.00
Barometric Pressure, in. Hg	(Pb)	29.60	29.60	29.60	29.60
Static Pressure, in. H2O	(Pg)	-0.64 🗸	-0.64	-0.64	-0.64
Pitot Tube Coefficient	(Cp)	0.84 🗸	0.84	0.84	0.84
Meter Correction Factor	(Y)	0.9880 🗸	0.9880 🏑	0.9880	0.9880
Orifice Calibration Value	(Delta H@)	1.7320 🗸	1.7320 🗸	1.7320	1.7320
Nozzle Diameter, in.	(Dn)	0.250 🗸	0.250	0.200	0.250
Meter Volume, ft^3	(Vm)	42.272 🗸	42.147	42.353	42.257
Meter Temperature, °F	(Tm)	85.8 🗸	93.1	95.3	91.4
Meter Temperature, °R	(Tm-R)	545.8	553.1	555.3	551.4
Meter Orifice Pressure, in. H2O	(Delta H)	1.300	1.300	1.300	1.300
Ave Sq Rt Orifice Press, (in. H2O) <sup>1</sup> / <sub>2</sub>	((Delta H)½)avg)	1.140	1.140	1.140	1.140
Volume H2O Collected, mL	(Vlc)	137.1 🗸	138.6	135.0	136.9
CO2 Concentration, %	(CO2)	6.9 🗸	6.8 🗸	7.3 //	7.0
O2 Concentration, %	(O2)	12.8	12.7	12.3	12.6
Ave Sq Rt Velo Head, (in. H2O) <sup>1</sup> / <sub>2</sub>	((Delta P)½)avg)	0.897 🗸	0.901 🗸	0.908	0.902
Stack Temperature, °F	(Ts)	468.3 🗸	470.3	480.9	473.2
Stack Temperature, °R	(Ts-R)	928.3	930.3	940.9	933.2
	CALCULATED	DATA			
Nozzle Area, ft <sup>2</sup>	(An)	3.41E-04	3.41E-04	3.41E-04	3.41E-04
Stack Area, ft <sup>2</sup>	(As)	78.54	78.54	78.54	78.54
Stack Pressure, in. Hg	(Ps)	29.55	29.55	29.55	29.55
Meter Pressure, in. Hg	(Pm)	29.70	29.70	29.70	29.70
Standard Meter Volume, ft <sup>3</sup>	(Vmstd)	40.087	39.435	39.477	39.667
Standard Water Volume, ft <sup>3</sup>	(Vwstd)	6.453	6.524	6.354	6.444
Moisture Fraction (Measured)	(BWS)	0.139	0.142	0.139	0.140
Moisture Fraction (lower sat/meas)	(BWS)	0.139	0.142	0.139	0.140
Mol. Wt. of Dry Gas, lb/lb-mole	(Md)	29.62	29.60	29.66	29.62
Mol. Wt. of Stack Gas, lb/lb-mole	(Ms)	28.01	27.95	28.04	28.00
Average Stack Gas Velocity, ft/sec	(Vs)	68.24	68.63	69.48	68.78
Stack Gas Flow, actual, ft <sup>3</sup> /min	(Qa)	321588	323402	327406	324132
Stack Gas Flow, Std , ft <sup>3</sup> /min			155499	156245	155766
Stack Gas Flow, Stu , It /IIIII	(Qs)	155554	133477	130243	155/00
Calibration check	(Yqa)	0.9937	1.0037	0.9996	0.999
Percent difference from Y	× 17				1.11%
					80



		2				H										Tanasa I	lecv.				1		Pulb Di	100	15730.001.008
	S S		NC	COMMENTS																		V <sub>m-std</sub> ,			per Machine, & #1-2 CBs ission Report
Page 1 of 1	Factor Checks	Hg 6	Ruh 1	SAMPLE	(in Hg)	2.5	2,5	2,5	25	2,5	2.5	2,5	2.5	2,5	25	2.5	2.5	M	5	n	N	Max Vac	Check %		
	X T	Volume, ft <sup>3</sup> @ Vac., in. Pitot	D le ID	IMPINGER	TEMP (°F)	65	63	09	58	54	5.8	55	hS	9	55	20	25	63	56	5.5	95	Max Temp	Thermocouple Check Meter Temp., °F	Ref. Temp, °F	٨
	0g 50	137.1	Filter ID Sample ID	FILTER	TEMP (°F)																1	Min/Max	The	æ	
	1 1 1 1 E		16	FILTER BOX	TEMP (°F)	247	250	252	253	455	255	256	256	255	754	255	256	255	253	254	255	Min/Max 27/7/26	rite M3A		
	396	-	rse Points	PROBE	EMIC (F)	245	244	245	942	ShZ	246	Shz	445	5 42	545	<i>bh2</i>	Shz	942	542	3/12	Shz	243/246	O <sub>2</sub> /CO <sub>2</sub> by Orsat Fyrite M3A Leak Check, Pre-run	Post-run	
Moisture	Ambient Temp. Baro. Pressure* Static Pressure Imbinder Gain	Silica Gel Gain	草	DGM	TEMP (°F)	79	79	80	18	h8	hb	85	28	58	84	88	80	84	06	05	100	Avg To V	O <sub>2</sub> /CO <sub>2</sub> Leak Che		
			,280 in. To	DGM; INJET	TEMP (°F)																/	A	u		
ethod: EPA 4,	4010 1988 7332	55 0.84		STACK	( <b>,E</b> )	996	894	467	895	166	166	194	12h	0470	24	469	464	596	20%	395	1970	YER .3	ompositio	oxide, %	
Metho	PR SB	72	052.	DRY GAS METER READING (ft³)	223.860	15.0	4.2	31,7	5.4.3	237.0	234,5	242,2	1.8	b'L	6.3	2,5	5.5	258.0	6.6	263.3	266,012	72, 272	Flue Gas Composition Oxygen, %	Carbon Dioxide, %	
	Console ID ter Corr., Y nsole $\Delta H @$	Liner Material Pitot ID/Coeff. Thermo ID	Diams. Diam.	DRY C	22	226.1	224.	221	234	23	7	24	244	247	256.	2.5	255	23	200:002	Ath	36	1 y2,	-		
	Console ID Meter Corr., Y Console ∆H@ Probe ID/Length	Liner N Pitot ID The	Nozzle ID/Diams. Avg. Nozzle Diam.	ORIFICE PRESSURE	(in. H <sub>2</sub> O)	1,3	1.3	1,3	1.3	1,3	1,3	1,3	1,3	1,3	1,3	1.3	1.3	1,3	1,3:	1,3	1,3	Avg AH	Avg VAH	only	
	Indy oa, SC nation Boiler	8008	1	VELOCITY PRESSURE	(in. H <sub>2</sub> O)	88	. 85	.85	11.	90	. 87	.85	180	05.	177;	90	,72	, 82	08.	,72	,701,	1 8473 V	80623	NCE	
Data	New Indy Catawba, SC Combination Boiler	15730.001.008	ATIC Min.	CLOCK TIME P (plant time)					0,16	7.72			:38	10192			1.58	90			h72		8 12	. Comments	
	No. 2		49		10:00		·00	12	01 91	010	7	3	01 2		9	ታ	4 10.	2 11:04	0	9	4 11:24	e is at port e	54 AT	Solutions, Air Services	
tic Fi	Client Location/Plant Source mple Location	W. O. Number Run Number Date	sst Personnel Sample Time	SAMPLE TIME (min)	0	ا کر	80	8	12	18 20	m 81	STIR	2432	\$36	3046	अक्रतम	bh ge	3957	45%	466	4861	*Barometric Pressure is at port elevation		AAir	
<b>Isokinetic Field</b>	Client Location/Plant Source Sample Location	W. O. I	Test Personnel Sample Time	rse T	NO.	A-1 C	2	က	4	1 P-1 D	2	က	4	9-1 A	,2	ဗ	4	P-1 B	, 2	3	4	*Barome	EWN3	Integrated Air Services	512

Page 1	K Factor	1 <sub>2</sub> 0   Leak	100	5 % 6 Volume, ft <sup>3</sup>	@ Vac., in. Hg	Pitot	Filter ID	Sample ID
Moisture	Ambient Temp. 85 °F Baro Pressure* 70 60 in Ho	Static Pressure - (Lt in. H <sub>2</sub> O	Impinger Gain 126, 9 mL	Silica Gel Gain (1,7 g 15%)		Stack Area 78.54 ft <sup>2</sup>	50 1250	Avg. Nozzle Diam. (250 in. Total Traverse Points 16
Method: EPA 4, Moisture	N Aplo	10 1,732	9th PRSB 51		eff. p17 2 0.84	ID Acto	ns. 250 1,250 1,250 1,250	am. (250 in.
	Console ID		Probe ID/Length	Liner Material	Pitot ID/Coeff.	Thermo ID	Nozzle ID/Diams250	Avg. Nozzle Dia
Id Data	New Indy Catawba, SC	Vo. 2		15730.001.008	2	6/25/21	ATR	64 min.
<b>Isokinetic Field Data</b>	Client Location/Plant	Source	Sample Location	W. O. Number	Run Number	Date	Test Personnel	Sample Time

1 of 1

	_		,			1 -1									la via								11.9	
	Final	0000		0000		NiGONLY	COMMENTS												V.		100			The second secon
K Factor NA	Initial	000'		0000	2	12 nn 2	SAMPLE TRAIN	(in Hg)	3.2.5	2.5	2,5	2,5	2,5	2.5	2,5	2,5	25	25	~	~	M	~	3.5	The state of the s
KFa		Volume, ft <sup>3</sup>	@ Vac., in. Hg	Pitot	D	le ID	IMPINGER EXIT	TEMP (°F)	99	20	56	25	19	09	54	09	59	63	19	19	59	59	69	
- C	2 0	158:6			Filter ID	Sample ID	FILTER	TEMP (°F)	_										/					
95 °F 97 19 19 19 19 19 19 19 19 19 19 19 19 19	6,9 mL,	7 9 15	1	78.54 ft <sup>2</sup>		16	FILTER BOX	TEMP (°F)	256	244	253	h52	256	255	952	255	256	256	256	255	247	249	250	-
1001	B	Gain (1)	411.00			Total Traverse Points	PROBE TEMP (°E)		242	144	5/2	246	247	248	24.1	248	249	250	251	252	244	265	192	
Ambient Temp. Baro. Pressure*	Impinger Gain	Silica Gel Gain		Stack Area	1250	tal Traver	DGM OUTET	TEMP (°F)	96	90	13	15	42	23	23	63	44	95	961	hb	45	45	54	
4 8 0					1250	in. To	DGM INI.ET	TEMP (°F)									321							
Aplo ,488	125	5	0.84	A010	1250	0	STACK	( <sup>6</sup> F)	467	470	124	02/2	895	464	<b>59</b> h	895	194	470	144	468	202	475	LLh	
A  -	PRSB		oeff. p172	Ol Or	ams250	iam. (250	DRY GAS METER READING (ft³)	266.300	364.0	271.5	274,2	2767	274.4	282.0	285,6	287.5	246,6	243,5	295,4	247, g	300,6	303,1	305,4	-
Console ID  Console AH@	Probe ID/Length	Liner Material	Pitot ID/Coeff.	Thermo ID	Nozzle ID/Diams.	Avg. Nozzle Diam.	ORIFICE PRESSURE	(in. H <sub>2</sub> O)	(,3	1,3	1.3	1,3	1,3	1,3	(3	1.7	1.3	1.3	1,3	(,3	1.3	1,3	5.1	
New Indy Catawba, SC 2 Combination Boiler	wher	01.008		12/52/9	7	min.	VELOCITY PRESSURE	(in. H <sub>2</sub> O)	.87	86	. 85	175	165	96'	, 85	. 43	58:	08.	08'	.65	. 46	, 85	64	
Catawba, SC O. 2 Combination	stury outlet	15730.001.008	2	2/9	KIN	64	CLOCK TIME (plant time)	11:35				11:51	11:57		4	Z'.Z	N:18	6	6)	4:34	#:n3	17	6	1
Client Location/Plant Source No.		Number	Run Number	Date	rsonnel	Sample Time	SAMPLE TIME (min)	0	الم را	8 8	912	2) 22	1310	1874	2128	2432	27.36	38.		3648	3862	9526	46 60	1.0
Locatio	Sample Location	W. O. Number	Run N	1	Test Personnel	Sampl	SE	Š	A-1 C	2	es.	4	Ø-1 Ø	2	8	4	¢-1 N	2	က	4	P-1 23	2	3	

96 MYS 126	495,123 242/265 247/25	11 O2/CO2 by Orsat Fyrite M3A	Leak Check, Pre-run	Post-run	
308,447, 478	S Avg AH Total Volume Avg Ts	Flue Gas Composition	Oxygen, %	Carbon Dioxide, %	Moisture, %
1 , 65 / 1.3	ANG VAP	4131 AND VAH	011110	Comments NC & CNVY	
4 4864 N:50	*Barometric Pressure is at port elevation			SOUTHONS	Integrated Air Services
		T.		Ü	

15730.001.008

The price of Paper Machine, who paper Machine, who paper Machine, who paper Machine, who paper Machine, which was a support of the paper of the pa

scf Qs, dscfm

Max Vac

Max Temp

Min/Max 247/26

65

48 64

Thermocouple Check

Ref. Temp, °F Result

Meter Temp., °F

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		1						r			Table 1										1	1-1		\$730.001.008
		.00.	1.600 mm	8																	V <sub>m-std</sub> ,		'	5730.001.008 per Machine, & #1-2 CBs ission Report
Page 1 of 1			Runs N	ш 5	. ~	M	M	3.5	3,5	5.5	3.5	3,5	3,5	5,5	3.5	3,5	3.5	3.5	3.5	3,5	Max Vac	%	Calculated by QC by	
Pa	KFa	Volume, ft <sup>3</sup> @ Vac., in. Hg	Priot D e ID	IMPINGER ÉXIT TEMP (°F)	59	19	70 /2	25	55	35	56	20	63	58	28	59	59	63	63	1 49	Max Temp	Thermocouple Check	Ref. Temp, °F Result	
	Hg 134.8	2,67.4 2,61	Filter ID Sample ID	FILTER EXIT TEMP (°F)			6														Mip/Max	Therm	Ref.	
	20 74 Fin Fig.		78.54 HT	FILTER BOX TEMP (°F)	250	12	250	253	250	250	152	250	251	250	249	348	242	942	248	249	Min/Max 5	yrite M3A		
	6 1 3	7	Area erse Poir	PROBE ) TEMP (°F)	250	252	253	252	253	252	253	254	253	254	255	254	255	256	257	1256	150/251	O <sub>2</sub> /CO <sub>2</sub> by Orsal Fyrite Leak Check, Pre-run	Post-run	
Moisture	Ambient Temp. Baro. Pressure* Static Pressure	Silica Gel Gain	Total	r DGM i OUTET °F) TEMP (°F)	95		96	1.5	96	95	96	99	96	96	96	54	63	63	43	15	ANGTES 35	O <sub>2</sub> /CO <sub>2</sub> Leak Ch		
EPA 4,	888	0.84	750 1,23 in.	STACK DGM TEMP INLET (PF) TEMP (PF)	18	98	258	58	178	Jn8	hs	82	74	Z	7 8	18	75	9476	084	79	4 80, 484 M	Osition 111	%,	
Method: EPA 4,	A010 : 4 8 : 73	72	50 .	ETER (ff.)	7	1 2	8.	5	1 1 7	7 9 7	7,11	h 8.	5	7	1.5	7 4	5 9	ў 2	-	7/250	SS 48	Flue Gas Composition 71	Carbon Dioxide, % Moisture, %	
			Diams. 12	DRY GAS ME READING	3/1/2	313.	316	319.3	325	324	321	329,	322	335	331	340.	343	345	348,	351,05	Total Volume / 253	Flu	Öğ	
	Console ID  Meter Corr., Y  Console AH@  Probe ID/I enoth	Liner Pitot IC	Nozzle ID/Diams. Avg. Nozzle Diam.	ORIFICE PRESSURE AH (in. H <sub>2</sub> O)	[3	1.3	1.3	13	1.3	1,3	1.3	1.3	1,3	1,3	1,3	1.3	1.3	1,3	1,3	1.3	Avg AH	Avg VAH	( only	
	dy , SC Ition Boiler	1.008	Jin.	VELOCITY PRESSURE  Ap  (in. H <sub>2</sub> O)	46	06.	38:	11.	, 95	. 40	.85	. 83	. 85	751.	12	72	. 85	なると	. 75	,70	40800	182689	nts N	
Data	(1)	15730.001.008	10 PA	CLOCK TIME (plant time)	0.0			13:5	3:37			13:53	47.4	1252	भारान	平屯	33.50	14,25	14:41	またる	ort elevation	Sil	O	
<b>Isokinetic Field</b>	Client n/Plant Source No.	umber		SAMPLE TIME (min)	5	8 8			1676	h7.81	21 18	2432	Z136 1	\$ 0h ge	3844	36 48	3652 4	456	8	4864 R	*Barometric Pressure is at port elevation		Integrated Air Services	
sokinet	Client Location/Plant Source	W. O. Number Run Number	Test Personnel Sample Time	TRAVERSE S/ POINT NO.	₩.1 C	2	3	4	1 Pe-1 D	2	ю	4	8-1V	2	е е	4	p-14	2	8	4	*Barometri	NAT.	Integrated	) E1 A
-						nije						1								100				514

# Sample Recovery Field Data

Method: EPA 4, Moisture

Location	Client	New Indy Catawba, SC		v,	Source V.O. Number	No. 2 Cor		
		Impi	ngers 1 - 3 measu					
Run No.			Sample Date	6/25/21	Rec	overy Date	6/25	121
Sample ID	Run A	166 only		NA			ATK	
1.15,170			Name - Contract - Cont	npingers				MIT FILE
Continue	1	2	3			Imp.Total	Silica Gel	Total
Contents	PI 2747	DI	empty				grams	
Final	779.7	746.5	660,3				965,3	L
Initial	670	, 780.9	657				896.8	
Gain	1097	15.6 V	3.3 V			128.6	8.51	137,1
lm	pinger Color	clear			Labled?			
Silica G	el Condition				Seale 1?	THE POST OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED		
Her Indian Plan								
Run No.	2		Sample Date	6/25/21	Reco	overy Date	6/25	121
Sample ID	Run 2 NCC	r only		NA			ATR	
		1		npingers	-		34	
	1.	2	3	Military to the		Imp.Total	Silica Gel	Total
Contents	DF	ÞI	empty 634,7	THE STATE OF THE S			grams	
Final	820,9	818.9					850.7	
Initial	718.5	797.1	632.0	10, 10, 10		V	839.6	
Gain	102,7102.4	21.8	2.7 /			126.9	11,7	138.6
lmı	pinger Color	clear			Labled?			
Silica G	el Condition	used			Seale J?			
Run No.			Sample Date	6/25/21	Reco	overy Date	6/25/	121
Sample ID	Run3 NCG	ronly	Filter ID	ATR		Analyst	1	
			Im	npingers				we la la
Contents	1	2	3			Imp.Total	Silica Gel	Total
Final	7/1/1 7	DI 7:12	ewfty				grams	
Initial	1300/1	742.1	645.5				939.4	
Gain	165.3	124,7	2.5		Mary Mary	125.2	929.6	134.8
	oinger Color	17.4 V	α·3 V		1 -1 1 - 10	اهي، م	9.80	1250
	CHEST CHOCK CONTRACTOR				Labled?	0		122
Silica G	el Condition	used			Sealed?		AP	7 /

Check COC for Sample IDs of Media Blanks





Number 1

Client: New Indy

Location: Catawba, NC

Source: #2 Combination Boiler

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: VD

Date: 25 Jun 2021

Start Time 10:00

**End Time** 11:00

**Average Measured TRS Conc.** 

Recovery No. 2

**TRS Corrected for Recovery** 

1.06 | 114 0.98 ppm 93.5 %

1.04 ppm

Number 2

Client: New Indy

Location: Catawba, NC

Source: #2 Combination Boiler

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 25 Jun 2021

Start Time 11:35

**End Time 12:35** 

Average Measured TRS Conc. Recovery No. 2 TRS Corrected for Recovery

0.92 ppm 93.5 % 0.99 ppm

1,18

क्षेत्रव



Number 3

Client: New Indy

Location: Catawba, NC

Source: #2 Combination Boiler

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: VD

Date: 25 Jun 2021

Start Time 13:15 End Time 14:15

**Average Measured TRS Conc.** 

Recovery No. 2

**TRS Corrected for Recovery** 

0.71 ppm 93.5 %

0.76 ppm

0...





Number 1

			TRS	mdd	96.0	0.97	1.02	1.18	1.14	1.49	1.07	1.16	1.10	1.08	1.07	1.04	1.09	1.07	1.09	1.18	1.25	1.18	1.21	1.41	1.14
1.008		121		V	0.032	0.032	0.032		0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032		0.032	0.032	0.032	0.032	0.032	0.032	0.032	
15730.001.008	ΛD	25 Jun 2021	DMDS	ppm				0.03									0.05								
lumber:	Operator:	Date:		area	<2	<b>~</b>	7	2	<b>%</b>	7	7	<b>%</b>	<b>~</b>	<b>~</b>	<b>~</b>	<2	4	<b>~</b>	<b>~</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>~</b>	<2	
Project Number:	ō			<b>V</b>		0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072		
			DMS	bpm	0.08																			0.16	
	"	1		area	2	<2	<b>~</b>	<2	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>%</b>	<2	<b>~</b>	<b>7</b>	<2	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	6	
	Method: 16	Calibration:		v																					
	Σ	Ca	MeSH	mdd	0.76	0.78	0.82	0.99	96.0	1.30	0.89	0.97	0.91	0.89	0.88	0.85	0.86	0.88	0.88	0.99	1.06	1.00	1.01	1.14	
				area	81	84	93	132	123	219	106	126	111	108	105	66	102	106	106	132	149	133	135	171	:
					0.05	90.0	90.0	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.07	0.05	0.05	0.05	0.07	0.05	0.05
		Soiler	S	v	0.052				0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052		0.052	0.052	0.052		0.052	
>	a, NC	#2 Combination Boiler	H <sub>2</sub> S	mdd		90.0	90.0	0.05											0.07				0.07		
New Indy	Catawba, NC	#2 Com		area	\$	7	7	7	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>~</b>	<b>%</b>	<b>%</b>	<b>~</b>	<2	<b>%</b>	က	\$	<b>~</b>	<b>~</b>	က	<2	
Client:	Location:	Source:		Time	10:00	10:03	10:06	10:09	10:12	10:15	10:18	10:21	10:24	10:27	10:30	07:40	10:36	10:39	10:42	10:45	10:48	10:51	10:54	10:57	Averages

Number 2

			TRS	ppm	1.05	1.06	1.04	0.97	1.24	1.43	1.30	1.07	1.17	1.27	1.36	1.18	1.03	1.08	0.95	0.93	0.92	0.92	1.06	0.95	1.10
1.008		021		<b>v</b>	0.032	0.032	0.032	0.032	0.032	0.032		0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032		0.032	0.032	0.032	0.032	
15730.001.008	ΛD	25 Jun 2021	DMDS	mdd							0.04									0.03					
Jumber:	Operator:	Date:		area	<2	7	<b>~</b>	7	7	7	က	7	7	7	<b>~</b>	<2	<b>~</b>	<2	<b>~</b>	7	<b>~</b>	<b>~</b>	7	<2	
Project Number:	ō			V		0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	
			DMS	bpm	0.11																				
	9	-		area	4	7	<b>~</b>	<b>%</b>	7	7	7	7	7	<b>~</b>	<2	<2	<b>~</b>	<2							
	Method: 16	Calibration:		V																					
	Σ	Ca	MeSH	mdd	0.82	0.87	0.85	0.78	1.05	1.24	1.10	0.88	0.98	1.08	1.17	0.99	0.84	0.89	0.77	0.74	0.73	0.73	0.88	0.77	
				area	93	104	86	85	147	201	160	105	129	156	180	132	96	109	81	9/	75	74	105	81	
					0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.02	0.05	0.05	0.02	0.05	0.05	0.02	0.05	0.05
		3oiler	Ø.	v	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052		0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	
	, NC	ination	H <sub>2</sub> S	mdd											0.05										
New Indy	Catawba, NC	#2 Combination Boiler		area	\$	7	7	%	<b>%</b>	7	<b>%</b>	7	<b>%</b>	<b>~</b>	7	<b>~</b>	<b>%</b>	<b>%</b>	<b>~</b>	<b>4</b>	<b>2</b>	<b>~</b>	<b>~</b>	<2	
Client:	Location:	Source:		Time	11:35	11:38	11:41	11:44	11:47	11:50	11:53	11:56	11:59	12:02	12:05	12:08	12:11	12:14	12:17	12:20	12:23	12:26	12:29	12:32	Averages

Number 3

			TRS	mdd	0.89	0.87	0.85	0.85	0.87	98.0	0.87	0.87	0.89	0.90	96.0	0.87	0.87	0.91	0.88	0.90	0.90	0.90	0.88	0.88	0.88
1.008		021		v	0.032	0.032	0.032	0.032		0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032		0.032	0.032	0.032	0.032	0.032	
15730.001.008	VD	25 Jun 2021	DMDS	mdd					0.04										0.03						
Jumper:	Operator:	Date:		area	<2	7	<b>%</b>	<b>~</b>	က	<b>%</b>	<b>%</b>	<b>~</b>	7	<b>~</b>	<b>~</b>	<b>~</b>	<2	<2							
Project Number:	0			<b>v</b>	0.072		0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072		0.072	0.072	0.072	0.072	0.072	0.072	0.072		0.072	
			DMS	ppm		0.09									0.10								0.09		
	ဖွ	1	:	area	<2	ო	<b>~</b>	<2	<2	<2	<2	<2	<2	<b>~</b>	4	<b>~</b>	<2	<2	<2	<2	<b>~</b>	<b>~</b>	က	<2	
	Method: 16	Calibration:		v																					
	Σ	Ca	MeSH	mdd	0.70	99.0	0.67	0.67	99.0	0.67	0.68	0.68	0.70	0.71	0.74	0.68	69.0	0.72	0.69	0.71	0.71	0.71	0.67	69.0	
				area	89	62	62	62	62	63	92	64	89	71	77	65	99	73	29	71	20	71	64	99	
					0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
		Soiler	S	v	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052		0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	
_	, NC	#2 Combination Boile	H <sub>2</sub> S	mdd											0.05										
New Indy	Catawba, NC	#2 Comb	:	area	<2	<b>7</b>	<b>2</b>	<b>~</b>	<b>~</b>	7	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	7	<b>~</b>	<b>~</b>	<2	<2	<b>~</b>	<2	<2	<b>~</b>	<2	
Client:	Location:	Source:		Time	13:15	13:18	13:21	13:24	13:27	13:30	13:33	13:36	13:39	13:42	13:45	13:48	13:51	13:54	13:57	14:00	14:03	14:06	14:09	14:12	Averages

Number 1

Client: New Indy Location: Catawba, NC

Source: #2 Combination Boiler

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

		I <sub>2</sub> S	Me	SH	D	MS	DΝ	MDS	TRS
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
10:00	<2	<0.052	81	0.76	2	0.08	<2	<0.032	0.84
10:03	2	0.06	84	0.78	<2	< 0.072	<2	< 0.032	0.84
10:06	2	0.06	93	0.82	<2	< 0.072	<2	< 0.032	0.88
10:09	2	0.05	132	0.99	<2	< 0.072	2	0.03	1.11
10:12	<2	< 0.052	123	0.96	<2	< 0.072	<2	< 0.032	0.96
10:15	<2	< 0.052	219	1.30	<2	< 0.072	<2	< 0.032	1.30
10:18	<2	< 0.052	106	0.89	<2	< 0.072	<2	< 0.032	0.89
10:21	<2	< 0.052	126	0.97	<2	< 0.072	<2	< 0.032	0.97
10:24	<2	< 0.052	111	0.91	<2	< 0.072	<2	< 0.032	0.91
10:27	<2	< 0.052	108	0.89	<2	< 0.072	<2	< 0.032	0.89
10:30	<2	< 0.052	105	0.88	<2	< 0.072	<2	< 0.032	0.88
10:33	<2	< 0.052	99	0.85	<2	< 0.072	<2	< 0.032	0.85
10:36	<2	< 0.052	102	0.86	<2	< 0.072	4	0.05	0.96
10:39	<2	< 0.052	106	0.88	<2	< 0.072	<2	< 0.032	0.88
10:42	3	0.07	106	0.88	<2	< 0.072	<2	< 0.032	0.95
10:45	<2	< 0.052	132	0.99	<2	< 0.072	<2	< 0.032	0.99
10:48	<2	< 0.052	149	1.06	<2	< 0.072	<2	< 0.032	1.06
10:51	<2	< 0.052	133	1.00	<2	< 0.072	<2	< 0.032	1.00
10:54	3	0.07	135	1.01	<2	< 0.072	<2	< 0.032	1.07
10:57	<2	<0.052	171	1.14	9	0.16	<2	< 0.032	1.30
Average	9	<0.052		0.94		<0.072		<0.032	0.98 🗸



Number 2

Client: New Indy
Location: Catawba, NC
Source: #2 Combination Boiler

Method 16 Calibration 1 Project Number: **15730.001.008**Operator: **VD** 

<b>-</b>	Н	I <sub>2</sub> S	Me	SH	D	MS	DN	MDS	TRS
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
11:35	<2	<0.052	93	0.82	4	0.11	<2	<0.032	0.93
11:38	<2	< 0.052	104	0.87	<2	< 0.072	<2	< 0.032	0.87
11:41	<2	< 0.052	98	0.85	<2	< 0.072	<2	< 0.032	0.85
11:44	<2	< 0.052	85	0.78	<2	< 0.072	<2	< 0.032	0.78
11:47	<2	< 0.052	147	1.05	<2	< 0.072	<2	< 0.032	1.05
11:50	<2	< 0.052	201	1.24	<2	< 0.072	<2	< 0.032	1.24
11:53	<2	< 0.052	160	1.10	<2	< 0.072	3	0.04	1.18
11:56	<2	< 0.052	105	0.88	<2	< 0.072	<2	< 0.032	0.88
11:59	<2	< 0.052	129	0.98	<2	< 0.072	<2	< 0.032	0.98
12:02	<2	< 0.052	156	1.08	<2	< 0.072	<2	< 0.032	1.08
12:05	2	0.05	180	1.17	<2	< 0.072	<2	< 0.032	1.23
12:08	<2	< 0.052	132	0.99	<2	< 0.072	<2	< 0.032	0.99
12:11	<2	< 0.052	96	0.84	<2	< 0.072	<2	< 0.032	0.84
12:14	<2	< 0.052	109	0.89	<2	< 0.072	<2	< 0.032	0.89
12:17	<2	< 0.052	81	0.77	<2	< 0.072	<2	< 0.032	0.77
12:20	<2	< 0.052	76	0.74	<2	< 0.072	2	0.03	0.81
12:23	<2	< 0.052	75	0.73	<2	< 0.072	<2	< 0.032	0.73
12:26	<2	< 0.052	74	0.73	<2	< 0.072	<2	< 0.032	0.73
12:29	<2	<0.052	105	0.88	<2	< 0.072	<2	< 0.032	0.88
12:32	<2	<0.052	81	0.77	<2	< 0.072	<2	<0.032	0.77
Average		<0.052		0.91		<0.072		<0.032	0.92 /





Number 3

Client: New Indy Location: Catawba, NC

Source: #2 Combination Boiler

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

		I <sub>2</sub> S	Mo	SH	D	MS	DI	MDS	TRS
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
13:15	<2	<0.052	68	0.70	<2	<0.072	<2	<0.032	0.70
13:18	<2	< 0.052	62	0.66	3	0.09	<2	< 0.032	0.75
13:21	<2	< 0.052	62	0.67	<2	< 0.072	<2	< 0.032	0.67
13:24	<2	< 0.052	62	0.67	<2	< 0.072	<2	< 0.032	0.67
13:27	<2	< 0.052	62	0.66	<2	< 0.072	3	0.04	0.75
13:30	<2	< 0.052	63	0.67	<2	< 0.072	<2	< 0.032	0.67
13:33	<2	< 0.052	65	0.68	<2	< 0.072	<2	< 0.032	0.68
13:36	<2	< 0.052	64	0.68	<2	< 0.072	<2	< 0.032	0.68
13:39	<2	< 0.052	68	0.70	<2	< 0.072	<2	< 0.032	0.70
13:42	<2	< 0.052	71	0.71	<2	< 0.072	<2	< 0.032	0.71
13:45	2	0.05	77	0.74	4	0.10	<2	< 0.032	0.90
13:48	<2	< 0.052	65	0.68	<2	< 0.072	<2	< 0.032	0.68
13:51	<2	< 0.052	66	0.69	<2	< 0.072	<2	< 0.032	0.69
13:54	<2	< 0.052	73	0.72	<2	< 0.072	<2	< 0.032	0.72
13:57	<2	< 0.052	67	0.69	<2	< 0.072	2	0.03	0.76
14:00	<2	< 0.052	71	0.71	<2	< 0.072	<2	< 0.032	0.71
14:03	<2	< 0.052	70	0.71	<2	< 0.072	<2	< 0.032	0.71
14:06	<2	< 0.052	71	0.71	<2	< 0.072	<2	< 0.032	0.71
14:09	<2	< 0.052	64	0.67	3	0.09	<2	< 0.032	0.76
14:12	<2	< 0.052	66	0.69	<2	< 0.072	<2	< 0.032	0.69
Average		<0.052		0.69		<0.072		<0.032	0.71



Number 0

Client: New Indy Location: Catawba, NC

Source: #2 Combination Boiler

Method 16 Calibration 1 Project Number: **15730.001.008**Operator: **VD** 

Time	H <sub>2</sub>	2S	Me	SH	D	MS	DN	MDS	TRS
Time	area	ppm	area	ppm	area	ppm	area	ppm	ppm
			C	C416806	7.257pp	m			
09:05	13721	7.67	<2	<0.11	<2	<0.072	<2	< 0.032	7.67
09:08	14535	7.93	<2	<0.11	<2	< 0.072	<2	< 0.032	7.93
09:11	14516	7.92	<2	<0.11	<2	<0.072	<2	<0.032	7.92
 Average		7.84		<0.11	/	<0.072		<0.032	~ 7.84



### **RECOVERY DATA**

Number 1

Client: New Indy

Location: Catawba, NC

Source: #2 Combination Boiler

Method 16 Calibration 1 Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Before Run 1

Start Time 09:13 End Time 09:27

Recovery Gas to Probe, Time 09:13

Peak Areas, mv-sec

12553

12693

12570

Average

ppm

12606 / 7.31

Recovery Gas to GC, Time 09:23

Peak Areas, mv-sec

15183

15401 15355

Average / ppm 15313 / 8.16

Recovery 89.6%

#### **RECOVERY DATA**

Number 2

Client: New Indy

Location: Catawba, NC

Source: #2 Combination Boiler

Method 16
Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

After Run 3 Before Run 4

Start Time 14:27

**End Time** 15:01

Recovery Gas to Probe, Time 14:27

Peak Areas, mv-sec

12960

12992

13133

Average

ppm

13028 / 7.45

Recovery Gas to GC, Time 14:57

Peak Areas, mv-sec

14768

14713

14525

Average

ppm

14669 / 7.97

Recovery 93.5%

# **CALIBRATION DATA**

Number 1

Client: New Indy

Project Number: 15730.001.008

Operator: **VD** 

Location: Catawba, NC Source: #2 Combination Boiler

Method 16 Date: 24 Jun 2021

	Ambient Temperature: 72°C	Barometric I	Pressure: 29.55 in. h	-lg
Analyte	H₂S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/m	in 348	365	473	239
Ret. Time, sec	16.0	22.5	48.0	127.0

Flow = <b>38.4</b> mL/Min	<b>9.05</b> ppm	<b>9.51</b> ppm	<b>12.3</b> ppm	<b>6.22</b> ppm
Time: 06:02		Peak Areas	s, mv-sec	
	18150	9129	29752	37042
	18234	8899	29635	36567
	17949	9072	29588	35648
Average Area	18111 /	9034 /	29658 /	36419 /
2 Flow = 86.9 mL/Min	<b>4.00</b> ppm	<b>4.20</b> ppm	<b>5.44</b> ppm	<b>2.75</b> ppm
Time: 08:24		Peak Areas	s, mv-sec	
	4494	1991	6636	8003
	4478	2048	6673	8033
	4420	2010	6502	8101
Average Area	4464 /	2016 /	6604	8046
3 Flow = 191 mL/Min	<b>1.82</b> ppm	<b>1.92</b> ppm	<b>2.48</b> ppm	<b>1.25</b> ppm
Time: 08:49		Peak Areas	s, mv-sec	
	1072	443	1449	1837
	1039	453	1513	1835
	1077	449	1476	1874
Average Area	1063	448 /	1479	1849



### **CALIBRATION SUMMARY**

Number 1

Client: New Indy

Project Number: 15730.001.008

Location: Catawba, NC

Operator: **VD** 

Date: 24 Jun 2021

Source: #2 Combination Boiler

Method 16

H₂S	1	2	3		
Time	06:02	08:24	08:49		
Concentration, ppm	9.05	4.00	1.82		
Area, mv-sec	18111	4464	1063		
Calc. Conc., ppm	8.97	4.07	1.81		
% Error	-0.8	1.7	-0.9		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.7702	2.5709	0.9998	2	0.052
MeSH	1	2	3		
Time	06:02	08:24	08:49		
Concentration, ppm	9.51	4.20	1.92		
Area, mv-sec	9034	2016	448 -		
Calc. Conc., ppm	9.46	4.25	1.91		
% Error	-0.6	1.1	-0.6		
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8751	2.1261	0.9999	2	0.11
DMS	1	2	3		
Time	06:02	08:24	08:49		
Concentration, ppm	12.3	5.44	2.48 -		
Area, mv-sec	29658	6604	1479 ′		
Calc. Conc., ppm	12.2	5.49	2.47		
% Error	-0.5	1.0	-0.5		
<b>Calibration Curve</b>	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8718	2.4355	0.9999 ,	2	0.072
DMDS	1	2	3		
Time	06:02	08:24	08:49		
Concentration, ppm	6.22 .	2.75	1.25		
Area, mv-sec	36419	8046	1849 '		
Calc. Conc., ppm	6.21	2.76	1.25		
% Error	-0.2	0.4	-0.2		
Calibration Curve	Slope	Intercept	Corr. Coeff.	Min. Area	Det. Lim.
	1.8610	3.0854	>0.9999	2	0.032
	•				



# **CALIBRATION DATA**

Number 2

Client: New Indy Location: Catawba, NC

Source: #2 Combination Boiler

Method 16

Project Number: 15730.001.008

Operator: **VD** 

Ambient	Temperature: 72°C	Barometric Pr	essure: 29.65 in. Hg	
Analyte	H <sub>2</sub> S	MeSH	DMS	DMDS
Perm. Device ID	T-51828	33-53274	89-53332	89-53266
Perm. Rate, nL/min	346	364	471	238
Ret. Time, sec	16.0	22.5	48.0	127.0
1 Flow = 38.9 mL/Min	<b>8.90</b> ppm	<b>9.36</b> ppm	<b>12.1</b> ppm	<b>6.12</b> ppm
Time: 06:02		Peak Areas	s, mv-sec	
	18368	8795	28785	34758
	18368	8383	27462	34707
	18202	8971	28270	35006
Average Area	18313	8716	28172	34824 ~
2 Flow = 82.3 mL/Min	<b>4.21</b> ppm	<b>4.42</b> ppm	<b>5.72</b> ppm	<b>2.89</b> ppm
Time: 07:54		Peak Areas	s, mv-sec	
	4753	2023	6969	8481
	4768	2067	7036	8510
	4706	2032	7080	8577
Average Area	4742	2041	7028	8523
3 Flow = 175 mL/Min	<b>1.98</b> ppm	<b>2.08</b> ppm	<b>2.69</b> ppm	<b>1.36</b> ppm
Time: 08:29		Peak Areas	s, mv-sec	
	1079	476	1619	1945
	1065	464	1599	1933
	1045	467	1556	1954
Average Area	1063	469	1591	1944 /



# **CALIBRATION SUMMARY**

Number 2

Client: New Indy

Project Number: 15730.001.008

Operator: **VD** 

Location: Catawba, NC

Source: #2 Combination Boiler

Method 16

		-			
H <sub>2</sub> S	1	2	3		
Time	06:02	07:54	08:29		
Concentration, ppm	8.90	4.21	1.98		
Area, mv-sec	18313	4742	1063		
Calc. Conc., ppm	8.80	4.31	1.96		
% Error	-1.2	2.4	-1.2		
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.
	1.8930	2.4749	0.9996	2	0.071
			_		
MeSH	1	2	3		
Time	06:02	07:54	08:29		
Concentration, ppm	9.36	4.42	2.08		
Area, mv-sec	8716	2041	469 ·		
Calc. Conc., ppm	9.35	4.43	2.08		
% Error	-0.1	0.1	-0.1		
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.
	1.9432	2.0539	>0.9999	2	0.13
DMS	1	2	3		
Time	06:02	07:54	08:29		
Concentration, ppm	12.1	5.72	2.69		
Area, mv-sec	28172	7028	1591		
Calc. Conc., ppm	12.0	5.81	2.67		
% Error	-0.8	1.5	-0.8		
Calibration Curve	Slope	Intercept		Min. Area	Det. Lim.
	1.9111	2.3864	0.9998	2	0.081
DMDS	1	2	3		
Time	06:02	07:54	08:29		
Concentration, ppm	6.12	2.89	1.36		
Area, mv-sec	34824	8523	1944 ·		
Calc. Conc., ppm	6.09	2.92	1.35		
		4 4	0 =		
% Error	-0.5	1.1	-0.5		
% Error Calibration Curve	-0.5 <b>Slope</b> 1.9189	1.1 <b>Intercept</b> 3.0366		Min. Area	<b>Det. Lim.</b> 0.038





#### **ANALYTES AND STANDARDS**

Client: New Indy Project Number: 15730.001.008

Location: Catawba, NC Operator: VD

Source: #2 Combination Boiler Method 16 Date: 24 Jun 2021

Analyte Molecular Weight	<b>H₂S</b> 34.08	<b>MeSH</b> 48.11	<b>DMS</b> 62.14	<b>DMDS</b> 94.20
Retention Time, sec	16.0	22.5	48.0	127.0
Peak Detection Window, sec	3.0	7.0	10.0	10.0
Minimum Peak Area, mv-sec	2	2	2	2
Minimum Peak Height, mv	1	1	1	1
Beginning Peak Width, sec	1.0	1.0	2.0	3.0
Ending Peak Width, sec	2.0	6.0	4.0	5.0
Permeation Device ID	T-51828	33-53274	89-53332	89-53266
Permeation Rate, ng/min	483 /	716	/ 1197	918
Permeation Rate, nL/min*	346	364	471	238

Barometric Pressure: 29.65 in. Hg Ambient Temperature: 72 °F

No Oxygen Correction

\*Permeation rates are gravimetrically determined by the manufacturer with results by weight in ng/min. Permeation rates by volume, in nL/min, are calculated from the permeation rates by weight as follows:

 $PR_{nl} = PR_{ng} \times (V_{mol} / W_{mol}) \times [(460^{\circ} + T_a) / T_s] \times (P_s / P_b)$ 

Where:

PR<sub>nl</sub> = Permeation Rate by volume, nL/minPR<sub>ng</sub> = Permeation Rate by weight, ng/min

V<sub>mol</sub> = Molar Volume of any gas @32 °F & 29.92 mm Hg = 22.4 L/mole

W<sub>mol</sub> = Molecular Weight of compound

T<sub>a</sub> = Ambient Temperature, °F

T<sub>s</sub> = Standard Temperature = 492°R (32 °F)

P<sub>s</sub> = Standard Pressure = 29.92 in Hg

P<sub>b</sub> = Barometric Pressure, in Hg

For example, H<sub>2</sub>S:

 $PR_{nl} = 483 \times (22.4 / 34.08) \times [(460 + 72) / 492] \times (29.92 / 29.65)$ 

= 346 nL/min

To calclate concentrations:

 $C = PR_{nl} / F_{d}$ 

Where:

**C** = Concentration, ppmv

**PR**<sub>nl</sub> = Permeation Rate by volume, nL/min

 $F_d$  = Flow rate of diluent, mL/min



#### **INSTRUMENT INFORMATION**

Client: New Indy

Location: Catawba, NC

Project Number: 15730.001.008

Operator: **VD** 

Source: #2 Combination Boiler Method 16 Date: 24 Jun 2021

File: C:\Data\210625 New Indy Catawba No. 2 CB.trs

Program Version: 2.0, built 15 May 2017 File Version: 2.0

Computer: WLT5 Trailer: 281

Analog Input Device: MCC USB-1608G GC Channel: 16

Sampling Rate: 0.050 sec. Data Interval: 0.5 sec.

Gas Chromatograph: Shimadzu GC8-A Serial No. C10493615061

**Detector Range: 10** 

	Gases		Temperatures, °C	Columns
	Press. psi	Flow mL/min	Column: 140	Primary: Carbopack
$H_2$	30	50	Detector: 140	Secondary: N/A
Air	30	60		Sample Loop: 4"
Carrier	50	30		•

#### **Injection Cycle**

Total Length: 180 sec Sampling Time: 170 sec Load/Backflush Time: 80 sec

#### **Default Integration Parameters**

Signal Threshold 0.67 mv Peak detection window ±10 sec Minimum peak area 2 mv-sec Minimum peak height 1 mv above baseline

#### **Dynacalibrator**

Chamber Temperature 50.0°C
Ambient Temperature 72.0°F
Barometric Pressure 29.65 in. Hg

Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

	O <sub>2</sub>	CO <sub>2</sub>	SO <sub>2</sub>
Method	EPA 3A	EPA 3A	EPA 6C
Conc. Units	%	%	ppm

Time: 10:00 to 11:00

#### **Run Averages**

12.7

6.9

239

#### Pre-run Bias at 08:17

Zero Bias	0.1	0.0	0
Span Bias	10.1	10.1	235
Span Gas	10.1	10.2	242

#### Post-run Bias at 11:02

Zero Bias	0.1	0.0	3
Span Bias	10.1	10.2	234
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

12.8

6.9



Number 2

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Cal				

Metho	d
Conc.	Units

$O_2$	
EPA 3A	
%	

SO <sub>2</sub>
EPA 6C
ppm

Time: 11:35 to 12:35

#### **Run Averages**

1	2	6
- 1	_	U

6.8

236

3 234 242

#### Pre-run Bias at 11:02

Zero Bias	0.1	0.0	
Span Bias	10.1	10.2	
Span Gas	10.1	10.2	

#### Post-run Bias at 12:37

Zero Bias	0.1	0.0	4
Span Bias	10.1	10.3	233
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

12.7

6.8

Number 3

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

	O <sub>2</sub>	CO <sub>2</sub>	SO <sub>2</sub>
Method	EPA 3A	EPA 3A	EPA 6C
Conc. Units	%	%	ppm

Calibration 1

Time: 13:15 to 14:15

#### **Run Averages**

12.2 7.4 227

#### Pre-run Bias at 12:37

Zero Bias	0.1	0.0	4
Span Bias	10.1	10.3	233
Span Gas	10.1	10.2	242

#### Post-run Bias at 14:18

Zero Bias	0.1	0.0	3
Span Bias	10.1	10.3	235
Span Gas	10.1	10.2	242

Run averages corrected for the average of the pre-run and post-run bias

12.3

7.3

Number 1

CO<sub>2</sub>

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler Calibration 1

 $O_2$ 

Project Number: 15730.001.008

Operator: **VD** 

SO<sub>2</sub>

	Timo	U	2		/2	30	J2		
	Time	mv	%	mv	%	mv	ppm		
			Wit	h NCGs					
٦	<b>Fraversed</b>	@ 16.6	%, 50.0	%, & 83	.3% of	duct di	ameter		
				oint 1					
	10:01	4314	13.0	2711	6.8	2231	223		
	10:02	4127	12.4	2693	6.8	2427	243		
	10:03	3866	11.6	2882	7.2	3028	303		
	10:04	4048	12.2	3101	7.8	2931	294		
	10:05	4371	13.1	2830	7.1	2792	280		
	10:06	4214	12.7	2598	6.5	2744	275		
	10:07	4404	13.2	2717	6.8	2549	255		
	10:08	4432	13.3	2556	6.4	2381	239		
	10:09	4440	13.3	2525	6.3	2263	227		
	10:10	4322	13.0	2519	6.3	2158	216		
	10:11	4328	13.0	2637	6.6	2162	217		
	10:12	4385	13.2	2626	6.6	2193	220		
	10:13	4522	13.6	2530	6.3	2241	224		
	10:14	4412	13.3	2437	6.1	2406	241		
	10:15	4514	13.6	2516	6.3	2379	238		
	10:16	4438	13.3	2431	6.1	2199	220		
	10:17	4257	12.8	2535	6.4	2174	218		
	10:18	4213	12.7	2737	6.9	2241	224		
	10:19	4345	13.1	2739	6.9	2209	221		
	10:20	4343	13.1	2616	6.6	2331	234		
	40.04	1050		oint 2	0.0	0000	007		
	10:21	4252	12.8	2645	6.6	2363	237		
	10:22	4189	12.6	2732	6.9	2403	241		
	10:23	4205	12.6	2804	7.0	2439	244		
	10:24	4123	12.4	2800	7.0	2285	229		
	10:25	4217	12.7	2868	7.2	2134	214		
	10:26	4152	12.5	2778	7.0 7.2	2284	229		
	10:27	4109 4114	12.4	2854	7.2 7.2	2237 2323	224 233		
	10:28	4040	12.4	2884		2323			
	10:29 10:30	4040	12.2 12.2	2895 2951	7.3 7.4	2347	235 239		
	10.30	3914	11.8	2931	7.4	2766	239		
	10.31	3838	11.5	3092	7.4	2952	296		
	10.32	3878	11.5	3148	7.8 7.9	2802	281		
	10.33	3881	11.7	3100	7.8	2829	283		
	10:34	3805	11.4	3128	7.8	2819	282		
	10:36	3986	12.0	3176	8.0	2678	268		
	10:37	4082	12.3	2992	7.5	2502	251		
	10.01	7002	12.0	2002	1.0	2002	201		

Number 1

Client: New Indy Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

	-	C	2	CO <sub>2</sub>		SO <sub>2</sub>	
	Time	mv	%	mv	%	mv	ppm
***	10:38	4118	12.4	2910	7.3	2587	259
	10:39	4064	12.2	2896	7.3	2602	261
	10:40	4051	12.2	2923	7.3	2579	258
			P	Point 3			
	10:41	4186	12.6	2928	7.3	2285	229
	10:42	4176	12.6	2836	7.1	2194	220
	10:43	4231	12.7	2826	7.1	2244	225
	10:44	4271	12.8	2751	6.9	2227	223
	10:45	4322	13.0	2714	6.8	2311	231
	10:46	4389	13.2	2648	6.6	2366	237
	10:47	4368	13.1	2573	6.5	2239	224
	10:48	4347	13.1	2602	6.5	2140	214
	10:49	4333	13.0	2620	6.6	2257	226
	10:50	4389	13.2	2635	6.6	2143	215
	10:51	4232	12.7	2598	6.5	2222	223
	10:52	4255	12.8	2745	6.9	2179	218
	10:53	4285	12.9	2723	6.8	2198	220
	10:54	4371	13.1	2691	6.7	2220	222
	10:55	4374	13.2	2595	6.5	2301	230
	10:56	4456	13.4	2583	6.5	2244	225
	10:57	4396	13.2	2507	6.3	2304	231
	10:58	4354	13.1	2561	6.4	2323	233
	10:59	4335	13.0	2615	6.6	2320	232
	11:00	4399	13.2	2622	6.6	2200	220
	Avgs	4231	12.7	2747	6.9	2388	239

Number 2

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Time	_	O <sub>2</sub>	C	O <sub>2</sub>	S	O <sub>2</sub>		
Time	mv mv	%	mv	%	mv	ppm		
1.		Wi	th NCG	S				
Traver	sed @ 16	.6%, 50.	0%, & 8	3.3% o	f duct d	iamete	r	
			Point 1					
11:3			2609	6.5	2261	226		
11:3			2557	6.4	2328	233		
11:3			2622	6.6	2380	238		
11:3			2769	6.9	2403	241		
11:4			2771	7.0	2418	242		
11:4			2693	6.8	2431	244		
11:4			2631	6.6	2427	243		
11:4			2685	6.7	2490	249		
11:4			2730	6.8	2490	249		
11:4			2656	6.7	2413	242		
11:4			2615	6.6	2123	213		
11:4			2486	6.2	2236	224		
11:4			2412	6.0	2247	225		
11:4			2459	6.2	2277	228		
11:5			2462	6.2	2327	233		
11:5			2488	6.2	2313	232		
11:5			2479	6.2	2272	228		
11:5			2541	6.4	2031	203		
11:5			2569	6.4	2137	214		
11:5	5 4207		2585	6.5	2166	217		
			Point 2					
11:5			2684	6.7	2242	225		
11:5			2667	6.7	2295	230		
11:5			2684	6.7	2253	226		
11:5			2615	6.6	2229	223		
12:0			2583	6.5	2253	226		
12:0			2550	6.4	2272	228		
12:0			2559	6.4	2271	227		
12:0			2673	6.7	2349	235		
12:0			2680	6.7	2273	228		
12:0			2534	6.4	2076	208		
12:0			2540	6.4	2099	210		
12:0			2607	6.5	2241	224		
12:0			2607	6.5	2314	232		
12:0			2624	6.6	2453	246		
12:1			2653	6.7	2521	253		
12:1			2744	6.9	2493	250		
12:1	2 4206	12.6	2740	6.9	2592	260		

Number 2

Client: New Indy Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: **15730.001.008**Operator: **VD** 

T:	C	2	CC	$O_2$	S	SO <sub>2</sub>	
Time	mv	- %	mv	%	mv	ppm	
12:13	4209	12.7	2689	6.7	2605	261	
12:14	4238	12.7	2684	6.7	2666	267	
12:15	4158	12.5	2669	6.7	2715	272	
		P	Point 3				
12:16	4055	12.2	2753	6.9	2751	276	
12:17	3990	12.0	2868	7.2	2688	269	
12:18	3939	11.8	2950	7.4	2548	255	
12:19	3957	11.9	2993	7.5	2572	258	
12:20	3826	11.5	3008	7.5	2717	272	
12:21	3759	11.3	3146	7.9	2831	284	
12:22	3791	11.4	3207	8.0	2823	283	
12:23	3992	12.0	3141	7.9	2505	251	
12:24	4042	12.2	2991	7.5	2388	239	
12:25	4027	12.1	2983	7.5	2136	214	
12:26	4021	12.1	2991	7.5	2238	224	
12:27	4113	12.4	2988	7.5	2358	236	
12:28	4294	12.9	2842	7.1	2311	231	
12:29	4137	12.4	2721	6.8	2274	228	
12:30	4179	12.6	2858	7.2	2199	220	
12:31	4196	12.6	2831	7.1	2153	216	
12:32	4211	12.7	2813	7.1	2155	216	
12:33	4133	12.4	2811	7.1	2187	219	
12:34	4123	12.4	2892	7.3	2167	217	
12:35	4132	12.4	2906	7.3	2212	222	
Avgs	4203	12.6	2722	6.8	2360	236	

## **RUN DATA**

Number 3

Client: New Indy Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

		0	2	CC	)2	SC	)2	
	Time	mv	%	mv	%	mv	ppm	
Dain4	47			h NCGs		المحادية	4 diamatan	
Point	11raver	sea @ 1		oint 1	x 03.37	% or auc	t diameter	
	13:16	4025	12.1	2990	7.5	2283	229	
	13:17	4006	12.0	2985	7.5	2344	235	
	13:18	4014	12.1	3013	7.6	2374	238	
	13:19	4052	12.2	2989	7.5	2389	239	
	13:20	4026	12.1	2953	7.4	2531	254	
	13:21	4003	12.0	2988	7.5	2655	266	
	13:22	4076	12.3	2998	7.5	2518	252	
	13:23	4126	12.4	2928	7.3	2216	222	
	13:24	4036	12.1	2880	7.2	2164	217	
	13:25	3976	12.0	2977	7.5	2201	220	
	13:26	4029	12.1	3036	7.6	2207	221	
	13:27	3877	11.7	3020	7.6	2279	228	
	13:28	3883	11.7	3156	7.9	2224	223	
	13:29	3890	11.7	3160	7.9	2165	217	
	13:30	3945	11.9	3138	7.9	2191	219	
	13:31	4007	12.1	3072	7.7	2198	220	
	13:32	3980	12.0	3028	7.6	2190	219	
	13:33	4062	12.2	3024	7.6	2210	221	
	13:34	4082	12.3	2955	7.4	2299	230	
	13:35	4002	12.0	2933	7.4	2245	225	
	10.00	1001		oint 2	<b>-</b> 0	0000	007	
	13:36	4004	12.0	3017	7.6	2066	207	
	13:37	4042	12.2	3000	7.5	2123	213	
	13:38	4037	12.1	2961	7.4	2120	212	
	13:39	4072	12.2	2957	7.4	2115	212	
	13:40	4138	12.4	2912	7.3	2161	216	
	13:41	4128	12.4	2868 2882	7.2	2192	220	
	13:42	4223	12.7 12.5		7.2 7.0	2218 2404	222 241	
	13:43 13:44	4167 4237	12.5	2797 2841	7.0 7.1	2304	231	
	13:44	4204	12.7	2772	7.1	2163	217	
	13:46	4107	12.4	2820	7.0	2120	212	
	13:47	4040	12.4	2935	7.1	2206	221	
	13:48	4047	12.2	3002	7.5	2151	215	
	13:49	4005	12.0	3011	7.6	2182	219	
	13:50	4072	12.2	3028	7.6	2200	220	
	13:51	4137	12.4	2957	7.4	2212	222	
	13:52	4252	12.8	2874	7.2	2237	224	

## **RUN DATA**

Number 3

Client: New Indy Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Time	0		CC			O <sub>2</sub>	
	mv	%	mv	%	mv	ppm	
 13:53	4203	12.6	2762	6.9	2299	230	
13:54	4079	12.3	2834	7.1	2325	233	
13:55	4099	12.3	2931	7.4	2314	232	
		Р	oint 3				
13:56	3918	11.8	2960	7.4	2285	229	
13:57	4031	12.1	3101	7.8	2072	208	
13:58	4012	12.1	3007	7.5	2181	218	
13:59	4139	12.4	2984	7.5	2175	218	
14:00	4064	12.2	2888	7.2	2212	222	
14:01	4020	12.1	2962	7.4	2361	237	
14:02	4061	12.2	2999	7.5	2467	247	
14:03	4059	12.2	2957	7.4	2321	232	
14:04	4063	12.2	2957	7.4	2171	217	
14:05	4076	12.3	2967	7.4	2230	223	
14:06	4174	12.6	2927	7.3	2244	225	
14:07	4149	12.5	2840	7.1	2293	230	
14:08	4155	12.5	2860	7.2	2376	238	
14:09	3989	12.0	2886	7.2	2434	244	
14:10	4063	12.2	3018	7.6	2362	237	
14:11	4079	12.3	2977	7.5	2283	229	
14:12	4160	12.5	2927	7.3	2279	228	
14:13	4188	12.6	2828	7.1	2288	229	
14:14	4006	12.0	2839	7.1	2371	238	
14:15	3961	11.9	3031	7.6	2439	244	
Avgs	4063	12.2	2955	7.4	2264	227	

## BIAS Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Start Time: 08:17

Calibration 1

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

	Bias Results										
Standard Gas	Cal. %	Response mv	Bias %	Difference %	Error %	Status					
Zero	0.0	24	0.1	0.1	0.5	Pass					
Span	10.1	3365	10.1	0.0	0.0	Pass					

CO<sub>2</sub>

Method: EPA 3A Span Conc. 20.3 %

		Bi	as Resu	lts		
Standard Gas	Cal. %	Response mv	Bias %	Difference %	Error %	Status
Zero	0.0	6	0.0	0.0	0.0	Pass
Span	10.2	4038	10.1	-0.1	-0.5	Pass

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

		Bi	as Resu	Its		
Standard Gas	Cal. ppm	Response mv	Bias ppm	Difference ppm	Error %	Status
Zero	0	-0	0	0	0.0	Pass
Span	242	2341	235	-7	-1.5	Pass

24-

Number 2

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Project Num

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Start Time: 11:02

Calibration 1

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

		Bi	as Resu	Its		
Standard	Cal.	Response	Bias	Difference	Error	
Gas	%	mv	%	%	%	Status
Zero	0.0	27	0.1	0.1	0.5	Pass
Span	10.1	3356	10.1	0.0	0.0	Pass
		Cali	bration	Drift		
Standard	Initial*	Fina	al	<b>Difference</b>	Drift	
Gas	%	mv	%	%	%	Status
Zero	0.1	27	0.1	0.0	0.0	Pass
Span	10.1	3356	10.1	0.0	0.0	Pass
•	*Bias No. 1					

CO<sub>2</sub>

Method: EPA 3A Span Conc. 20.3 %

		Bi	as Resu	Its		
Standard	Cal.	Response	Bias	Difference	Error	
Gas	%	mv	%	%	%	Status
Zero	0.0	24	0.0	0.0	0.0	Pass
Span	10.2	4048	10.2	0.0	0.0	Pass
		Cali	ibration	Drift		
Standard	Initial*	Fina	al	Difference	Drift	
Gas	%	mv	%	%	%	Status
Zero	0.0	24	0.0	0.0	0.0	Pass
Span	10.1	4048	10.2	0.1	0.5	Pass
•	*Bias No.	1				

Number 2

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Start Time: 11:02

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

		Bi	as Resu	Its		
Standard Gas Zero	Cal. ppm 0	Response mv 31	Bias ppm 3	Difference ppm 3	<b>Error</b> % 0.7	Status Pass
Span	242	2334	234	-8	-1.7	Pass
		Cali	bration	Drift		
Standard	Initial*	Fina	al	Difference	Drift	
Gas	ppm	mv	ppm	ppm	%	Status
Zero	0	31	3	3	0.7	Pass
Span	235 *Bias No. 1	2334	234	-1	-0.2	Pass

Number 3

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Start Time: 12:37

Calibration 1

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

		Bi	as Resu	Its		
Standard Gas	Cal.	Response mv	Bias %	Difference %	Error %	Status
Zero Span	0.0 10.1	13 3353	0.1 10.1	0.1 0.0	0.5 0.0	Pass Pass
		Cali	bration	Drift		
Standard Gas	Initial* %	Fina mv	al %	Difference %	Drift %	Status
Zero	0.1	13	0.1	0.0	0.0	Pass
Span	10.1 *Bias No. 2	3353 2	10.1	0.0	0.0	Pass

 $CO_2$ 

Method: EPA 3A Span Conc. 20.3 %

		Bi	as Resu	its		
Standard	Cal.	Response	Bias	Difference	<b>Error</b>	
Gas	%	mv	%	%	%	Status
Zero	0.0	3	0.0	0.0	0.0	Pass
Span	10.2	4094	10.3	0.1	0.5	Pass
	-	Cali	bration	Drift		
Standard	Initial*	Fina	al	Difference	Drift	
Gas	%	mv	%	%	%	Status
Zero	0.0	3	0.0	0.0	0.0	Pass
Span	10.2	4094	10.3	0.1	0.5	Pass
•	*Bias No. 2	) -				

Number 3

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Start Time: 12:37

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

		Bi	as Resu	Its		
Standard Gas Zero	Cal. ppm 0	Response mv 35	Bias ppm 4	Difference ppm 4	<b>Error</b> % 0.9	Status Pass
Span	242	2329	233	-9	-2.0	Pass
		Cali	bration	Drift		
Standard	Initial*	Fina	al	<b>Difference</b>	Drift	
Gas	ppm	mv	ppm	ppm	%	Status
Zero	3	35	4	1	0.2	Pass
Span	234	2329	233	-1	-0.2	Pass

Number 4

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Start Time: 14:18

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

		Bi	as Resu	lts		
Standard	Cal.	Response	Bias	Difference	<b>Error</b>	
Gas	%	mv	%	%	%	Status
Zero	0.0	34	0.1	0.1	0.5	Pass
Span	10.1	3356	10.1	0.0	0.0	Pass
		Cali	ibration	Drift		
Standard	Initial*	Fina	al	<b>Difference</b>	Drift	
Gas	%	mv	%	%	%	Status
Zero	0.1	34	0.1	0.0	0.0	Pass
Span	10.1	3356	10.1	0.0	0.0	Pass
-	*Bias No. 3	3				

CO₂ Method: EPA 3A

Span Conc. 20.3 %

		Bi	as Resu	Its		
Standard Gas	Cal. %	Response mv	Bias %	Difference %	Error %	Status
Zero	0.0	3	0.0	0.0	0.0	Pass
Span	10.2	4085	10.3	0.1	0.5	Pass
Standard	Initial*	Cali Fina	bration	Drift Difference	Drift	
Gas	""""""""""""""""""""""""""""""""""""""	mv	аі %	%	%	Status
Zero	0.0	3	0.0	0.0	0.0	Pass
Span	10.3 *Bias No. 3	4085 3	10.3	0.0	0.0	Pass

Number 4

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Start Time: 14:18

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

		Bi	as Resu	lts		
Standard Gas Zero	Cal. ppm 0	Response mv 30	Bias ppm 3	Difference ppm 3	<b>Error</b> % 0.7	Status Pass
Span	242	2344	235	-7	-1.5	Pass
		Cali	bration	Drift		
<b>Standard</b>	Initial*	Fina	al	Difference	Drift	
Gas	ppm	mv	ppm	ppm	%	Status
Zero	4	30	3	-1	-0.2	Pass
Span	233 *Bias No. 3	2344	235	2	0.4	Pass

## **CALIBRATION DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Start Time: 08:01

 $O_2$ 

Method: EPA 3A

Calibration Type: Linear Regression

	Calibration Results	
%	Cylinder ID	Result, mv
Zero	•	-2
10.1 /	XC013544B	3344
20.2	CC275468	6752
	Curve Coefficients	

Slope Intercept Corr. Coeff. 333.7 -15 >0.9999

CO<sub>2</sub>
Method: EPA 3A

Calibration Type: Linear Regression

	Calibration Results		
_%	Cylinder ID	Result, mv	
Zero	_	7	
10.2	XC013544B	4046	
20.3 🗸	CC275468	8070	
	Curve Coefficients		
Slope	Intercept	Corr. Coeff.	
397.8	6	1.0000	

## **CALIBRATION DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Project Number: 15730.001.008

Operator: VD

Date: 25 Jun 2021

Start Time: 08:01

SO<sub>2</sub>

Method: EPA 6C

Calibration Type: Linear Regression

**Curve Coefficients** 

**Slope** 10.00

Intercept -4 **Corr. Coeff.** >0.9999

## **CALIBRATION ERROR DATA**

Number 1

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Date: 25 Jun 2021

Start Time: 08:01

 $O_2$ 

Method: EPA 3A Span Conc. 20.2 %

**Slope** 333.7

Intercept -14.5

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	-2	0.0	0.0	0.0	Pass
10.1	3344	10.1	0.0	0.0	Pass
20.2	6752	20.3	0.1	0.5	Pass

CO<sub>2</sub>

Method: EPA 3A Span Conc. 20.3 %

**Slope** 397.8

Intercept 6.2

Standard %	Response mv	Result %	Difference %	Error %	Status
Zero	7	0.0	0.0	0.0	Pass
10.2	4046	10.2	0.0	0.0	Pass
20.3	8070	20.3	0.0	0.0	Pass

SO<sub>2</sub>

Method: EPA 6C Span Conc. 458 ppm

**Slope** 10.00

Intercept -4

Standard ppm	Response mv	Result ppm	Difference ppm	Error %	Status
Zero	-1	0	0	0.0	Pass
242	2413	242	0	0.0	Pass
458	4578	458	0	0.0	Pass

## **METHODS AND ANALYZERS**

Client: New Indy Project Number: 15730.001.008

Location: Catawba, SC Operator: VD

Source: No. 2 Combination Boiler Date: 25 Jun 2021

File: C:\Users\Dubayv\Desktop\Catawba\210625 New Indy Catawba No. 2 CB.cem

Program Version: 2.2, built 3 Jul 2020 File Version: 2.04
Computer: WSAUBCHEMLABGC1 Trailer: 281
Analog Input Device: Keithley KUSB-3108

458

Analog input bevice. Retailey 1008-01

## Channel 1

Analyte O<sub>2</sub>

Method EPA 3A, Using Bias Analyzer Make, Model & Serial No. Teledyne T802 s/n: 172

Full-Scale Output, mv 10000 Analyzer Range, % 25.0 Span Concentration, % 20.2

## Channel 2

Analyte CO<sub>2</sub>

Method EPA 3A, Using Bias Analyzer Make, Model & Serial No. Teledyne T802 s/n: 172

Full-Scale Output, mv
Analyzer Range, %
Span Concentration, %
10000
25.0
20.3

## **Channel 5**

Span Concentration, ppm

Analyte SO<sub>2</sub>

Method EPA 6C, Using Bias Analyzer Make, Model & Serial No. Teledyne T100H SN 374

Analyzer Make, Model & Serial No. Teledyne T100H SN 3
Full-Scale Output, mv 10000
Analyzer Range, ppm 500



## APPENDIX G LABORATORY REPORT



2655 Park Center Dr., Suite A Simi Valley, CA 93065 T: +1 805 526 7161 www.alsglobal.com

## LABORATORY REPORT

July 15, 2021

Daniel Mallett New-Indy Catawba LLC 5300 Cureton Ferry Road Catawba, SC 29704

**RE: DHEC Order** 

Dear Daniel:

Enclosed are the results of the samples submitted to our laboratory on June 29, 2021. For your reference, these analyses have been assigned our service request number P2103465.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at <a href="https://www.alsglobal.com">www.alsglobal.com</a>. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 5:44 pm, Jul 15, 2021

Sue Anderson Project Manager



2655 Park Center Dr., Suite A Simi Valley, CA 93065 T: +1 805 526 7161 www.alsglobal.com

Client: New-Indy Catawba LLC

Project: DHEC Order

Service Request No: P2103465

## **CASE NARRATIVE**

The samples were received intact under chain of custody on June 29, 2021 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

### Sulfur Analysis

The samples were analyzed for five sulfur compounds using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). All compounds with the exception of hydrogen sulfide and carbonyl sulfide are quantitated against the initial calibration curve for methyl mercaptan. This method is not included on the laboratory's NELAP or DoD-ELAP scope of accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.



2655 Park Center Dr., Suite A Simi Valley, CA 93065 T: +1 805 526 7161 www.alsglobal.com

## ALS Environmental - Simi Valley

## CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental- health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory- Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413- 19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA01627201 9-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at <a href="https://www.alsglobal.com">www.alsglobal.com</a>, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

Service Request: P2103465

## ALS ENVIRONMENTAL

## DETAIL SUMMARY REPORT

New-Indy Catawba LLC Client:

Project ID: DHEC Order

Date Received: Time Received:	6/29/2021 10:20				Sulfir	
Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Sulfir Lio	
3A-TRS 1000	P2103465-001	Water	6/24/2021	10:00	2	<
3A-TRS 1115	P2103465-002	Water	6/24/2021	11:15		
3A-TRS 1210	P2103465-003	Water	6/24/2021	12:10	2	<
3A-TRS 1331	P2103465-004	Water	6/24/2021	13:31		《基础后面记书》中国的
3A-TRS 1450	P2103465-005	Water	6/24/2021	14:50	2	<
2A-TRS 1510	P2103465-006	Water	6/24/2021	15:10		
2B-TRS 1515	P2103465-007	Water	6/24/2021	15:15	2	
3A-TRS 1600	P2103465-008	Water	6/24/2021	16:00		<
2A-TRS 1700	P2103465-009	Water	6/24/2021	17:00	2	<
2B-TRS 1705	P2103465-010	Water	6/24/2021	17:05		<
2A-TRS 1845	P2103465-011	Water	6/24/2021	18:45		
2B-TRS 1850	P2103465-012	Water	6/24/2021	18:50		<b>(</b>
3A-TRS Duplicate 1115	P2103465-013	Water	6/24/2021	11:15	2	Κ
2A-TRS Duplicate 1510	P2103465-014	Water	6/24/2021	15:10		<
2B-TRS Duplicate 1515	P2103465-015	Water	6/24/2021	15:15	2	K
3A-TRS 1403	P2103465-016	Water	6/25/2021	14:03		X .
3A-TRS 1630	P2103465-017	Water	6/25/2021	16:30	2	X
3A-TRS 1740	P2103465-018	Water	6/25/2021	17:40		X .
3A-TRS 1845	P2103465-019	Water	6/25/2021	18:45	2	X
3A-TRS 0817	P2103465-020	Water	6/25/2021	08:17		X
3A-TRS 0924	P2103465-021	Water	6/25/2021	09:24	2	X
3A-TRS 1030	P2103465-022	Water	6/25/2021	10:30		X
2A-TRS 1035	P2103465-023	Water	6/25/2021	10:35		X
2B-TRS 1040	P2103465-024	Water	6/25/2021	10:40		X
2A-TRS 1205	P2103465-025	Water	6/25/2021	12:05		X
2B-TRS 1210	P2103465-026	Water	6/25/2021	12:10		X
3A-TRS 1200	P2103465-027	Water	6/25/2021	12:00		X
3A-TRS 1255	P2103465-028	Water	6/25/2021	12:55		X
2A-TRS 1345	P2103465-029	Water	6/25/2021	13:45		X
2B-TRS 1350	P2103465-030	Water	6/25/2021	13:50		X
3A-TRS 1010	P2103465-031	Water	6/26/2021	10:10		X
3A-TRS 1125	P2103465-032	Water	6/26/2021	11:25		X
3A-TRS 1230	P2103465-033	Water	6/26/2021	12:30		X
3B-TRS 1305	P2103465-034	Water	6/26/2021	13:05		X
3A-TRS 1400	P2103465-035	Water	6/26/2021	14:00		X
3B-TRS 1415	P2103465-036	Water	6/26/2021	14:15		X
3A-TRS 1445	P2103465-037	Water	6/26/2021	14:45		X
3B-TRS 1530	P2103465-038	Water	6/26/2021	15:30		x
3A-TRS 1550	P2103465-039	Water	6/26/2021	15:50		X

Page 1 of

# Soil / Water - Chain of Custody Record & Analytical Service Request



15730.001.008 Pulp Dryer, #3 Paper Machine, #2-3 SDTVs, # #1-2 CRs identi fraction Collection date and time are छ Comments CAS PRIBANOS465 crucial COMPLE 1285/1340 Pr./000 020/ Tame 75-25 Salfor Salfer Sulfu Ligard Suffer 35 Liqued Exilty Salvi Salfar となる 515 1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard 6-29-4 Analysis 2-1-2-9 19410 Lia Vic Lidnid igud Liezd Dathe: 4-21 Date: (1 - 24 - 2) Requested Turnaround Time in Business Days (Surcharges) please circle Licute Light Livie EDD required Yes / No CAS Contact: Other Sicher Amer A Se P.O. # / Credit Card / Billing Information Control 1340 Received by: (Signature) Time: 10 Received by: (Signature) Date: | Time: | Received by: (Signature) | 1010/ | Ref Securd | Tier IV (Data Validation Package) 10% Surcharge Solid Tier III (Results + QC & Calibration Summaries) 000 Soll DHEC Project Number Water Y × X 35 × × × Time Collected 12 42/ 2 1331 6-24-4 14 50 24-21 100C 0121 2-4-9 01 21 12 72 10 0-24-21 1000 624-21 11 15 6-24-21 1331 511112-62-9 Date: Dan. mallettenew-indy cb. com (2-62-9 Date Collected 12-12-9 Company Name & Address (Reporting Information) Laboratory ID Number  ${\mathscr O}$ £ 8 9 ξ New Indv Contoine Book æ Report Tier Levels - please select 0001 1210 1331 35 1210 1450 1000 331 Tier I - Results (Default if not specified) 51 11 = 15 2655 Park Center Drive, Suite A 0108-181 (808) Simi Valley, Cafifornia 93065 Tier II (Results + QC Summaries) Project Manager Don Mallett Phone (805) 526-7161 3A-TRS #2 3A-TRS#2 3A-TRS#2 Fax (805) 526-7270 3A-TRS#1 3A-TRS#2 3 A- TRS #2 3A- TR5 #1 3A - TRS # 1 3A-TRS#1 SA-TRS#1 Client Sample ID

## Page 2 of Soil / Water - Chain of Custody Record & Analytical Service Request



Requested Turnaround Time in Business Days (Surcharges) please circle 2655 Park Center Drive, Sulte A Simi Valley, California 93065 Phone (805) 526-7161 Fax (805) 526-7270

15730.001.008 Pulp Dryer, #3 Paper Machine, #2-3 SDTVs, & #1-2 CBs identification CAS Projection 103 465 Comments Date and -lank art Collection cricial to SOMORE 1705/1740 Time: 1515/1520 Lrawid Sulfur 1 Day (100%) (2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard Analysis Date: 6/24 [21 Date: 0/2/21 Date: 0/24/2 EDD required Yes / No CAS Contact: Other Time: Received by, (Signature) 100 Pale: Time: Received by (Signature) Aren (1705/1711) Ref Secure Aren P.O. # / Credit Card / Billing Information Received by: (Signature) Solid Rer IV (Data Validation Package) 10% Surcharge Tier III (Results + QC & Calibration Summaries) 000 Soil CHEC Number Project Name <u>8</u> Water be × × × 3¢ × K Date: (2/2/2) Time Collected 1405 674 /2 305 200年 7600 00E 1600 1515 6-24-21 1510 0151 12-229 1515 12-p2-9 6-24-2 12-52-9 Collected となっ 12-p2-9 D-62-9 2-12-9 6-29-11 Date Company Name & Address (Reporting Information) Laboratory ID Number Dan.mallettenew-indyco.com 6 Q 0 Mew Indy Confairn Board 8 405 9091 1300 900 8 Report Tler Levels - please select 1515 1515 1510 Fier I - Results (Default if not specified) 150 (803)981-8010 Email Address for Result Reporting Tier II (Results + QC Summaries) Reliquished by (Signature) 10/2/10cg Dan Mallett Reliquished by: (Signature) 28-1842 34.18 #2 24-118年 28-115-12 2A-788#1 2A-TES#2 ZA-TRS #1 2B- TRS#1 3 A- TR#1 Client Sample ID 28- TES #1

6-79

Page 3 of 9

# Soil / Water - Chain of Custody Record & Analytical Service Request



2655 Park Center Drive, Suite A

Pulp Dryer, #3 Paper Machine, #2-3 SDTVs, & #1-2 CBs identification CAS Projection 2465 date Itim cracial for Comments \*Scande 129-41/16-0 Time: 1855 Ligard Saffer Requested Turnaround Time in Business Days (Surcharges) please circle 1 Day (100%) & Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard Analysis Date: 0 |21 |21 | EDD required Yes / No CAS Contact: Other Received by. (Signature)
Ref Secure Areco P.O. # / Credit Card / Billing Information Reported by: (Signature) Received by: (Signature) Solid Tier IV (Data Validation Package) 10% Surcharge Order Tier III (Results + QC & Calibration Summaries) Soff Project Name DHEC Project Number Water 1855 × × ¥ × Time: Тіте: 1830 Collected Date: 6/24 |2\ 6-41-11850 S-181 12-12-9 6-14-11 1845 Time Date: 2-12-7 Collected pan. malle-It-@new-inchy cb.com Company Name & Address (Reporting Information)

NEW INAN Contain W BOSIC ID Number Laboratory 9 Fax 1850 5481 1850 Report Tier Levels - please select 1845 Fier 1 - Results (Default if not specified) Email Address for Result Reporting Simi Valley, California 93065 Tier II (Results + QC Summaries) 0108 -186(508) Phone (805) 526-7161 Project Manager Don Mallett Collegished by: (Signature) Reliquished by: (Signatura) Reliquished by: (Signature) 28-TBS#2 Fax (805) 526-7270 28-TRS+1 2A-T8#2 2A-75#1 Client Sample ID

# Soil / Water - Chain of Custody Record & Analytical Service Request



CAS Projective 1024 65 1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard Analysis Requested Turnaround Time in Business Days (Surcharges) please circle CAS Contact: Other P.O. # / Credit Card / Billing Information Solid Order Soil 区内 Project Number Project Name Water Time Collected Collected Dar. mallet @ new-indycb.com Company Name & Address (Reporting Information)
New Indy Cortaine Booto Laboratory ID Number 2655 Park Center Drive, Sulte A Email Address for Result Reporting Simi Valley, California 93065 803/981-8010 Dan Mallett Phone (805) 526-7161 Fax (805) 526-7270 Client Sample ID Project Manager

15730.001.008 Pulp Dryer, #3 Paper Machine, #2-3 SDTVs, & #1-2 CBs and fin 8 Deplicate for QA Duplicate for GA a Note Somole Comments Durkust Dolicok Depliet Dollar \$ \$ Time: [152] 7820 Time: Lia Sulfur Analysis 7-6C-20 EDD required Yes / No Date: Date: (6-24-2) Time: Received by: (Signature) Secure Received by: (Signature) Received by (Otgnature) Ter IV (Data Validation Package) 10% Surcharge Tier III (Results + QC & Calibration Summaries) Time: × × × 12-12-07 1515 6-24-21 6-24-21 1510 5-x-1/1510 1515 SI 11 12-12-9 SI II 12-22-9 Darbe: (2-24-J 12-12-9 E E 3A-TIS # 1 Deplicate 3A -TRS # 2 Diolicate Policak Puplicak Report Tier Lavels - please select Dollak Dunlack Rer I - Results (Default if not specified) Fier II (Results + QC Summaries) A 120000 Reliquished by. (Signature) Religuished by (Signature) Reliquished by: Signature) 28-7847 28- TS#1 75年1 2A-TRS#2 562

# Soil / Water - Chain of Custody Record & Analytical Service Request



2655 Park Center Drive, Sulte A

15730.001.008 Pulp Dryer, #3 Paper Machine, #2-3 SDTVs, & #1-2 CBs dote and time i dentification are crucial for CAS Project NO 163 465 Comments \* Collection sample Thmay 24 6-25-21 1405/16B5/1745 Date: 6-18-1 1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard Analysis Requested Tynnaround Time in Business Days (Surcharges) please circle Liquid EDD required Yes / No CAS Contact: Type: 355 Other 1405/1635/1745 ReF Secure P.O. # / Credit Card / Billing Information Project Name
DHEC Order Received by. (Signature) Solid Tier IV (Data Validation Package) 10% Surcharge Received by: (Signature) Tier III (Results + QC & Calibration Summaries) Soll Project Number Water ¥ pe × X × ĸ × × Time: Time: Time Collected Oht 12-52-9 1740 0891 2-52-9 0291 12-52-9 1985 6-25-a 1403 E0h | 12-57-9 Date: 6-25-21 Date: Date: 12-52-9 Laboratory Date ID Number Collected 12-52-9 12-52-9 dan. mallett@ new-indy cb. com Company Name & Address (Reporting Information) E ڪا G New Indy Container Board 5300 Cureton Ferry Rd Ä 1845 유는 240 1630 1403 Catawba 15c 29704 Report Tier Levels - please select 1403 Tier I - Results (Default if not specified)\_ 1803/481-8010 Email Address for Result Reporting Simi Valley, California 93065 fler II (Results + QC Summarles) Don Mallett Phone (805) 526-7161 Reliquished by: (Signature) Religing had by: (Signatura) Reliquished by: (Signature) Fax (806) 526-7270 3A-TRS#Z 3A - 785#2 34-TS#1 3A-TRS #2 3A-TRS #2 3A-TR3 #1 Client Sample ID 3A-785 #1 3A-TS #1 roject Manage





2655 Park Center Drive, Suite A

15730.001.008 Pulp Dryer, #3 Paper Machine, #2-3 SDTVs, & #1-2 CBs identification dork and time ace crucial for CAS Projective 103 465 Comments \* Collection sample Date: 12/ 0820/0430/1035 Date: 2 - 18-11 Time: 10 20 Lio-Sully Amollosis 6/25/21 1040 / 1045 1 Day (100%) (2 Day (75%), 3 Day (50%), 4 Day (35%), 5 Day (25%), 10 Day-Standard Analysis Requested Turnaround Time in Business Days (Surcharges) please circle EDD required Yes / No CAS Contact Type: Time: Received by (Signature)
0820/0930/1035 ReF Suire ArriCA Time: Received by: (Signature) Other P.O. # / Credit Card / Billing Information Project Name
DHEC Order
Project Number Solid Tier IV (Data Validation Package) 10% Surcharge Received by: (Signature) Tier III (Results + QC & Calibration Summaries) Soff Water Collected p260 12-52-9 h760 13-52-9 1040 05 01 JE-57-9 0h 01 12-57-9 05 01 p.52-9 1180 p.sz-4 5801 12-52-9 Date: 1189 12-52-9 6-25-21 10 35 Date: |2/2/9 Collected 12-52-9 dan. mallett@ new-indy cb. com Company Name & Address (Reporting Information) in Number Laboratory B B 3 3 3 Ntw Indy Contoine Board Fax 5300 Culeton Ferry Rd Catawba 15C 29704 1030 040 0924 6260 1030 940 Report Tier Levels - please select 7180 0817 1635 1035 Fier I - Results (Default if not specified). (303) 981 - 8010 Email Address for Result Reporting Sim Valley, California 93065 Tier II (Results + QC Summarles) Dow Mallett Phone (805) 526-7161 SITHAGON Religious hed by: (Signature) Reliquished by (Signature) Reliquished by: (Signature) Fax (805) 526-7270 SA -TS #2 3A-TS#2 -TES 42 3A-TRS #2 2A - TRS #2 3A - TKS # 1 2A- TPS 41 ZA-TISE! - TRS #1 3A-TRS#1 Client Sample ID Project Manager

# Soil / Water - Chain of Custody Record & Analytical Service Request

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i dentifration dote and time or crucial for \* Collection Comments CAS Project No. 3 4 65 sample Time: 5/1355 Time: TIME CO のまで 6371 1 Day (100%) (2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard Analysis Light Requested Turnaround Time in Business Days (Surcharges) please circle EDD required Yes / No Date: (6-15-1) Date: (-25-2) CAS Contact: Type: Other 32X 1209 Received by (Signature) Artch P.O. # / Credit Card / Billing Information Order Received by: (Signature) Date: Time; Received by: (Signature) (/125/21 1215//356 ReF Sector) Solid Tier IV (Data Validation Package) 10% Surcharge Tier Ill (Results + QC & Calibration Summaries) Project Name DHEC Soil Project Numbe Water ¥ X A K × × × × Collected 6-25-21 1255 1205 1205 6-25-21 1210 6-25-1/ 1200 Date: 0/15/1 0121 n-52-9 0021 12-52-9 0551 p-52-9 0581 n-52-9 5h8||n-52-9 5h21|12-52-9 17-57-7 p-52-9 Laboratory Date
ID Number Collected dan. mallett@new-indycb.com Company Name & Address (Reporting Information) Sign 2 E E **(**\$\bar{2}\$ New Indy Contourny Board Æ 5300 Witten Ferry Rd Catawba 15C 29704 1255 5521 9021 345 5021 200 1350 1205 1345 1350 1210 1210 Report Tier Levels - please select Tier I - Results (Default if not specified) 2655 Park Center Drive, Suite A 1803/981-8010 Email Address for Result Reporting Simi Valley, California 93065 Fier II (Results + QC Summarles) elander Don Mallett guighad by (Signapule) Phone (805) 526-7161 Religiation of Signature) Reliquished by Signature) Fax (805) 526-7270 ZA-TRS#Z 3A. TRS#2 28-TIS #2 28-175-12 3A-TRS#1 3A-TRS #2 28-TRS#1 28. TRS#1 3A-TRS #1 2A-T25#1 2A-118 F7 Client Sample ID 对-18# roject Manage

15730.001.008 Pulp Dryer, #3 Paper Machine, #2-3 SDTVs, & #1-2 CBs hege 8 of

# Soil / Water - Chain of Custody Record & Analytical Service Request

ALS
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2655 Park Center Drive, Suite A

Pulp Dryer, #3 Paper Machine #2-3 SDTVs, & #1-2 CBs dote and time i dentification or crucial for CAS Project No. 34CS Comments \* Collection sample Time: 702ca 10195/1130 1735/13/0 Time: 1405/1420 Date: C-1 2-1 1 Day (100%) (2 Day (75%) Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard Analysis Requested Turnaround Time in Business Days (Surcharges) please circle round Date: 6-20-2 Date: (6-26-2) EDD required Yes / No CAS Contact Other P.O. # / Credit Card / Billing Information Time: / Received by: (Signature) Missing Received by (Signature) Order Received by: (Signature) Solid Ter IV (Data Validation Package) 10% Surcharge Tier III (Results + QC & Calibration Summaries) Project Name
DHEC Sog Project Number Water × x × × M × × X × Collected 0521 12-92-9 F26-21 1305 Date: 0-20-1) 9081 12-22-9 626-21 1010 62621 1016 0521 2-72-9 77-07-9 6-26-21 1125 6-26-21 1415 00hl 12-92-9 9051 12-92-9 51hl n-2-9 6-16-11 1125 Collected dan. mallett@ new-indy cb. com Company Name & Address (Reporting Information) Laboratory iD Number 3 3 New Indy Confound Board 10101 5300 Cuteton Ferry Rd 010 1230 1305 5 1125 1125 5 415 Catawba, SC 29704 022 1305 Report Tier Levels - please select Tier I - Results (Default if not specified) (803) 981 - 8010 Email Address for Result Reporting Simi Valley, California 93065 Fler II (Results + QC Summarles) Don Mallett Seliquished by (Signature) CANDO Phone (805) 526-7161 Reliquished by. (Signature) Reliquished by: (Signature) 3A-TRS #1 B-7842 Fax (805) 526-7270 SA-TPS # 2 3A-TRS#1 3A-175 #2 1754 3A- 125#7 3B-718#1 3B-TRS#2 3B-TB#1 Clent Sample ID 3A - TKS # roject Managel

# Soil / Water - Chain of Custody Record & Analytical Service Request

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identification dote and time are crucial for CAS Projection 103463 \* Collection Comments sample Time; 555 152/OST 17 June 6 CO Liquid Sulfur 1 Day (100% 2 Day (75%)) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard 6-18 Analysis Requested Turnaround Time in Business Days (Surcharges) please circle 12-02-9 Date: 6-26-2 EDD required Yes / No CAS Contact: Type: Other P.O. # / Credit Card / Billing Information 1445/SREF Secure And Project Name
DHEC Order Received by: (Signature)
Received by: (Signature) Solid Ifer IV (Data Validation Package) 10% Surcharge Tier III (Results + QC & Calibration Summaries) Soll Project Number Water × X × × K × Time: 558 Collected 5hh | m-97-9 0251 12-92-9 0551 p-92-9 Date: 626-11 6-26-21 1445 12-92-9 Laboratory Date
ID Number Collected n-92-7 p-92-9 Email Address for Result Reporting

dan . mailett@ new-indy cb. Com Company Name & Address (Reporting Information) F New Indy Contouing Board Fex 1535 5300 Witton Ferry Rd Catawba 15c 29704 Shhi 200 1550 445 1550 Report Tier Levels - please select Ter ! - Results (Default if not specified)\_ 2655 Park Center Drive, Sulte A 1803/481-8010 CALRO Simi Valley, California 93065 Tier II (Results + QC Summaries) Dan Mallett Refluished by: (Signatule) Phone (805) 526-7161 Relightshed by: (Signature Reliberation of Signature Fax (805) 526-7270 3B-7RS #2 3 A- 18 #2 3A-10542 3 A - 125 #1 3B-TR5 #1 BAMARA 3A-185#1 Client Sample ID Bernea roject Manager

15730.001.008 Pulp Dryer, #3 Paper Machine, #2-3 SDTVs, & #1-2 CBs

## ALS Environmental Sample Acceptance Check Form

LIUICCI	: DHEC Orde	r				Work order:	P2103465			
-	(s) received or				Date opened:	6/29/21	by:	ADAV	ID	
Vote: This	form is used for	all samples received by ALS	. The use of this fo	orm for custody se	eals is strictly me	eant to indicate presen	ce/absence and n	ot as an in	dication	of
		y. Thermal preservation and		•	•	-				
•					•		,	<u>Yes</u>	No	N/A
1	Were sampl	e containers properly	marked with cli	ent sample ID	?			X		
2	Did sample	containers arrive in go	ood condition?					X		
3	Were chain-	of-custody papers use	d and filled out	?				X		
4		container labels and/o			ers?			×		
5	_	volume received adeq			015.			X		
	_		·	15:				X		
6	-	within specified holding	-	6 1 .		. 0				
7		temperature (thermal	•		eipt adhered	to?		X		
		mperature: 2° C Bla	-					Wet Ic	_	_
8	Were custod	ly seals on outside of c	ooler/Box/Con	tainer?					X	
		Location of seal(s)	?				Sealing Lid?		X	
	Were signati	are and date included?							X	
	Were seals is	ntact?							X	
9	Do contair	ners have appropriate p	reservation, a	ccording to me	ethod/SOP or	Client specified i	nformation?	X		
		ient indication that the		_		*				Σ
		vials checked for pres	-						X	
					المام المام السام	if managemy altern	:40		X	
4.0		ent/method/SOP requir	-		impie pri and	ii necessary aner	It?			
10	Tubes:	Are the tubes cap	-							×
11	Badges:	Are the badges p	properly capped	and intact?						×
		Are dual bed bac	lges separated a	ınd individuall	y capped and	l intact?				
										×
Lah	Sample ID	Container	Required	Received	Adjusted	VOA Headsnace	Recei	nt / Pres		
Lat	Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Recei	pt / Pres Comme	ervatio	
	Sample ID 55-001.01						<b>Recei</b> GG 7/1/21		ervatio	
P210346		Description		pН	pН	(Presence/Absence)	GG 7/1/21		ervatio	
P210346 P210346 P210346	65-001.01 65-001.02 65-002.01	Description 40mL VOA NP		pН	pН	(Presence/Absence)  A A A			ervatio	
P210346 P210346 P210346 P210346	55-001.01 55-001.02 55-002.01 55-002.02	Description  40mL VOA NP  40mL VOA NP		<b>pH</b>	<b>pH</b> 6	(Presence/Absence)  A A	GG 7/1/21 GG 7/1/21		ervatio	
P210346 P210346 P210346 P210346 P210346	55-001.01 55-001.02 55-002.01 55-002.02 55-003.01	Description  40mL VOA NP  40mL VOA NP  40mL VOA NP		<b>pH</b>	<b>pH</b> 6	(Presence/Absence)  A A A A A A A A	GG 7/1/21		ervatio	
P210346 P210346 P210346 P210346 P210346	55-001.01 55-001.02 55-002.01 55-002.02 55-003.01 55-003.02	Description  40mL VOA NP		pH  1  1  1	<b>pH</b> 6 6 6	(Presence/Absence)  A A A A A A A A A A A A A	GG 7/1/21 GG 7/1/21 GG 7/1/21		ervatio	
P210346 P210346 P210346 P210346 P210346 P210346	55-001.01 55-001.02 55-002.01 55-002.02 55-003.01 55-003.02 55-004.01	Description  40mL VOA NP		pH 1	<b>pH</b> 6	(Presence/Absence)  A A A A A A A A A A A A A A	GG 7/1/21 GG 7/1/21		ervatio	
P210346 P210346 P210346 P210346 P210346 P210346 P210346	55-001.01 55-001.02 55-002.01 55-002.02 55-003.01 55-003.02 55-004.01 55-004.02	Description  40mL VOA NP		pH  1  1  1  1  1	<b>pH</b> 6 6 6 6	(Presence/Absence)  A A A A A A A A A A A A A A A A A	GG 7/1/21 GG 7/1/21 GG 7/1/21 GG 7/1/21		ervatio	
P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346	55-001.01 55-001.02 55-002.01 55-002.02 55-003.01 55-003.02 55-004.01 55-004.02 55-005.01	Description  40mL VOA NP		pH  1  1  1	<b>pH</b> 6 6 6	(Presence/Absence)  A A A A A A A A A A A A A A A A A A	GG 7/1/21 GG 7/1/21 GG 7/1/21		ervatio	
P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346	55-001.01 55-001.02 55-002.01 55-002.02 55-003.01 55-003.02 55-004.01 55-004.02 55-005.01	Description  40mL VOA NP		pH  1  1  1  1  1  1  1	6 6 6 6	(Presence/Absence)  A A A A A A A A A A A A A A A A A A	GG 7/1/21 GG 7/1/21 GG 7/1/21 GG 7/1/21 GG 7/1/21		ervatio	
P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346	55-001.01 55-001.02 55-002.01 55-002.02 55-003.01 55-003.02 55-004.01 55-005.01 55-005.02	Description  40mL VOA NP		pH  1  1  1  1  1	<b>pH</b> 6 6 6 6	(Presence/Absence)  A A A A A A A A A A A A A A A A A A	GG 7/1/21 GG 7/1/21 GG 7/1/21 GG 7/1/21		ervatio	
P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346	55-001.01 55-001.02 55-002.01 55-002.02 55-003.01 55-003.02 55-004.01 55-004.02 55-005.01 55-006.01	Description  40mL VOA NP		pH  1  1  1  1  1  1  1  1  1  1	6 6 6 6	(Presence/Absence)  A A A A A A A A A A A A A A A A A A	GG 7/1/21 GG 7/1/21 GG 7/1/21 GG 7/1/21 GG 7/1/21 GG 7/1/21		ervatio	
P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346	55-001.01 55-001.02 55-002.01 55-002.02 55-003.01 55-004.01 55-004.02 55-005.01 55-006.01 55-006.02 55-007.01	Description  40mL VOA NP	pH  1  1  1  1  1  1  1	6 6 6 6	(Presence/Absence)  A A A A A A A A A A A A A A A A A A	GG 7/1/21 GG 7/1/21 GG 7/1/21 GG 7/1/21 GG 7/1/21		ervatio		
P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346 P210346	55-001.01 55-001.02 55-002.01 55-002.02 55-003.01 55-003.02 55-004.01 55-004.02 55-005.01 55-006.01	Description  40mL VOA NP		pH  1  1  1  1  1  1  1  1  1  1	6 6 6 6	(Presence/Absence)  A A A A A A A A A A A A A A A A A A	GG 7/1/21 GG 7/1/21 GG 7/1/21 GG 7/1/21 GG 7/1/21 GG 7/1/21		ervatio	

## ALS Environmental Sample Acceptance Check Form

Client: New-Indy Catawba LLC	Work order:	P2103465
Project: DHEC Order		

Sample(s) received on: 6/29/21 Date opened: 6/29/21 by: ADAVID

Lab Sample ID	Container	Required	Received	Adjusted	VOA Headspace	Receipt / Preservation
	Description	pH *	pН	pН	(Presence/Absence)	Comments
P2103465-008.02	40mL VOA NP				A	
P2103465-009.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-009.02	40mL VOA NP				A	
P2103465-010.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-010.02	40mL VOA NP				A	
P2103465-011.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-011.02	40mL VOA NP				A	
P2103465-012.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-012.02	40mL VOA NP				A	
P2103465-013.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-013.02	40mL VOA NP				A	
P2103465-014.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-014.02	40mL VOA NP				A	
P2103465-015.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-015.02	40mL VOA NP				A	
P2103465-016.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-016.02	40mL VOA NP				A	
P2103465-017.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-017.02	40mL VOA NP		-		A	
P2103465-018.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-018.02	40mL VOA NP				A	
P2103465-019.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-019.02	40mL VOA NP				A	
P2103465-020.01	40mL VOA NP		1	6	A	GG 7/1/21
P2103465-020.02	40mL VOA NP				A	
P2103465-021.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-021.02	40mL VOA NP				A	
P2103465-022.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-022.02	40mL VOA NP				A	
P2103465-023.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-023.02	40mL VOA NP		<u> </u>		A	
P2103465-024.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-024.02	40mL VOA NP	<u> </u>			A	
P2103465-025.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-025.02	40mL VOA NP	1			A	
P2103465-026.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-026.02	40mL VOA NP				A	
P2103465-027.01	40mL VOA NP	<del></del>	1	6	A	GG 7/9/21
P2103465-027.02	40mL VOA NP				A	
P2103465-028.01	40mL VOA NP		1	6	A	GG 7/9/21

Explain any discrepancies: (include lab sample ID numbers):	

ADAVID

by:

## ALS Environmental Sample Acceptance Check Form

Client: New-Indy Catawba LLC	Work order:	P2103465
Project: DHEC Order		

Date opened: 6/29/21

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2103465-028.02	40mL VOA NP				A	
P2103465-029.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-029.02	40mL VOA NP				A	
P2103465-030.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-030.02	40mL VOA NP				A	
P2103465-031.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-031.02	40mL VOA NP				A	
P2103465-032.01	40mL VOA NP		1	6	A	GG 7/9/21
22103465-032.02	40mL VOA NP				A	
P2103465-033.01	40mL VOA NP		-1	6	A	GG 7/9/21
22103465-033.02	40mL VOA NP				Α	
P2103465-034.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-034.02	40mL VOA NP				A	
P2103465-035.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-035.02	40mL VOA NP				A	
P2103465-036.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-036.02	40mL VOA NP				A	
P2103465-037.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-037.02	40mL VOA NP				A	
P2103465-038.01	40mL VOA NP		1	6	A	GG 7/9/21
P2103465-038.02	40mL VOA NP				A	
P2103465-039.01	40mL VOA NP	1	1	6	A	GG 7/15/21
P2103465-039.02	40mL VOA NP				A	
		-				

Explain any discrepancies: (i	nclude lab sample ID num	bers):		

Sample(s) received on: 6/29/21

## **RESULTS OF ANALYSIS** Page 1 of 1

**Client:** 

New-Indy Catawba LLC

Client Sample ID: 3A-TRS 1000

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P2103465-001

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst: Sample Type:

Test Notes:

Gilbert Gutierrez

Water

Date Received: 6/29/21

Date Analyzed: 7/1/21

Date Collected: 6/24/21

Liquid Amount:

1.0 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

 $0.050 \, \text{ml(s)}$ 

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	200,000	170	
74-93-1	Methyl Mercaptan	740	240	
75-18-3	Dimethyl Sulfide	ND	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	ND	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

## **RESULTS OF ANALYSIS** Page 1 of 1

New-Indy Catawba LLC **Client:** 

Client Sample ID: 3A-TRS 1115 ALS Project ID: P2103465 ALS Sample ID: P2103465-002 Client Project ID: DHEC Order

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst: Sample Type: Gilbert Gutierrez

Test Notes:

Water

Date Analyzed: 7/1/21 Liquid Amount: 1.0 ml(s)

Purge Volume:

Date Collected: 6/24/21 Date Received: 6/29/21

0.30 Liter(s)

Injection Volume(s):

 $0.050 \, \text{ml(s)}$ 

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	210,000	170	
74-93-1	Methyl Mercaptan	700	240	
75-18-3	Dimethyl Sulfide	ND	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	ND	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

## **RESULTS OF ANALYSIS** Page 1 of 1

**Client:** 

**New-Indy Catawba LLC** 

Client Sample ID: 3A-TRS 1210

Client Project ID: DHEC Order

ALS Project ID: P2103465

Date Collected: 6/24/21

Date Received: 6/29/21

ALS Sample ID: P2103465-003

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Analyst: Sample Type:

Test Notes:

Water

Agilent 6890A/GC13/SCD Gilbert Gutierrez

Date Analyzed: 7/1/21 Liquid Amount:

1.0 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.050 ml(s)

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	170,000	170	
74-93-1	Methyl Mercaptan	640	240	
75-18-3	Dimethyl Sulfide	ND	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	ND	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

## **RESULTS OF ANALYSIS**

Page 1 of 1

**New-Indy Catawba LLC Client:** 

ALS Project ID: P2103465 Client Sample ID: 3A-TRS 1331 Client Project ID: DHEC Order ALS Sample ID: P2103465-004

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Collected: 6/24/21

Date Received: 6/29/21 Date Analyzed: 7/1/21

Liquid Amount:

1.0 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.050 ml(s)

CAS#	Compound	Result	MRL	Data
	-	μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	160,000	170	
74-93-1	Methyl Mercaptan	540	240	
75-18-3	Dimethyl Sulfide	ND	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	ND	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

## **RESULTS OF ANALYSIS**

Page 1 of 1

**New-Indy Catawba LLC Client:** 

ALS Project ID: P2103465 Client Sample ID: 3A-TRS 1450 Client Project ID: DHEC Order ALS Sample ID: P2103465-005

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Gilbert Gutierrez

Analyst: Sample Type: Test Notes:

Water

Agilent 6890A/GC13/SCD

Date Analyzed: 7/1/21 Liquid Amount:

Date Collected: 6/24/21

Date Received: 6/29/21

1.0 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.050 ml(s)

CAS#	Compound	Result	MRL	Data
	•	μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	170,000	170	
74-93-1	Methyl Mercaptan	560	240	
75-18-3	Dimethyl Sulfide	ND	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	ND	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

## **RESULTS OF ANALYSIS**

Page 1 of 1

Client: New-Indy Catawba LLC

Client Sample ID: 2A-TRS 1510

ALS Project ID: P2103465

Client Project ID: DHEC Order

ALS Sample ID: P2103465-006

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Collected: 6/24/21

Date Received: 6/29/21 Date Analyzed: 7/1/21

Liquid Amount:

1.0 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.050 ml(s)

CAS#	Compound	Result	MRL	Data
	-	μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	130,000	170	
74-93-1	Methyl Mercaptan	14,000	240	
75-18-3	Dimethyl Sulfide	16,000	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	13,000	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

### **RESULTS OF ANALYSIS**

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**Client:** 

New-Indy Catawba LLC

Client Sample ID: 2B-TRS 1515

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P2103465-007

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Collected: 6/24/21

Date Received: 6/29/21 Date Analyzed: 7/1/21

Liquid Amount:

10 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.20 ml(s)

CAS#	Compound	Result	MRL	Data Qualifier
	-	μg/L	μg/L	
7783-06-4	Hydrogen Sulfide	5,000	4.2	
74-93-1	Methyl Mercaptan	200	5.9	
75-18-3	Dimethyl Sulfide	2,800	7.6	
75-15-0	Carbon Disulfide	ND	4.7	
624-92-0	Dimethyl Disulfide	4,100	5.8	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

## **RESULTS OF ANALYSIS**

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Client:

**New-Indy Catawba LLC** 

Client Sample ID: 3A-TRS 1600

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P2103465-008

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Collected: 6/24/21

Date Received: 6/29/21 Date Analyzed: 7/1/21

Liquid Amount:

1.0 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.050 ml(s)

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	190,000	170	
74-93-1	Methyl Mercaptan	830	240	
75-18-3	Dimethyl Sulfide	360	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	710	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

### **RESULTS OF ANALYSIS**

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**Client: New-Indy Catawba LLC** 

Client Sample ID: 2A-TRS 1700 ALS Project ID: P2103465 Client Project ID: DHEC Order ALS Sample ID: P2103465-009

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst: Sample Type:

Test Notes:

Gilbert Gutierrez Water

Date Received: 6/29/21 Date Analyzed: 7/1/21

Date Collected: 6/24/21

Liquid Amount:

1.0 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

 $0.050 \, \text{ml(s)}$ 

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	140,000	170	
74-93-1	Methyl Mercaptan	17,000	240	
75-18-3	Dimethyl Sulfide	18,000	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	14,000	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

### **RESULTS OF ANALYSIS** Page 1 of 1

Client:

**New-Indy Catawba LLC** 

Client Sample ID: 2B-TRS 1705

Client Project ID: DHEC Order

ALS Project ID: P2103465

Date Collected: 6/24/21

Date Received: 6/29/21

ALS Sample ID: P2103465-010

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst: Sample Type: Gilbert Gutierrez

Test Notes:

Water

Date Analyzed: 7/1/21 Liquid Amount:

10 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.20 ml(s)

CAS#	Compound	Result	MRL	Data Qualifier
	-	μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	7,100	4.2	
74-93-1	Methyl Mercaptan	540	5.9	
75-18-3	Dimethyl Sulfide	2,900	7.6	
75-15-0	Carbon Disulfide	ND	4.7	
624-92-0	Dimethyl Disulfide	3,900	5.8	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

### **RESULTS OF ANALYSIS**

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**Client:** 

**New-Indy Catawba LLC** 

Client Sample ID: 2A-TRS 1845

ALS Project ID: P2103465

Client Project ID: DHEC Order

Gilbert Gutierrez

ALS Sample ID: P2103465-011

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst: Sample Type: Test Notes:

Water

Date Collected: 6/24/21 Date Received: 6/29/21 Date Analyzed: 7/1/21

Liquid Amount:

1.0 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.050 ml(s)

CAS#	Compound	Result	MRL	Data Qualifier
	-	μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	150,000	170	
74-93-1	Methyl Mercaptan	19,000	240	
75-18-3	Dimethyl Sulfide	18,000	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	16,000	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

# **RESULTS OF ANALYSIS**

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New-Indy Catawba LLC **Client:** 

ALS Project ID: P2103465 Client Sample ID: 2B-TRS 1850 Client Project ID: DHEC Order ALS Sample ID: P2103465-012

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Collected: 6/24/21

Date Received: 6/29/21 Date Analyzed: 7/1/21

Liquid Amount:

10 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.20 ml(s)

CAS#	Compound	Result	MRL	Data
	-	μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	8,100	4.2	
74-93-1	Methyl Mercaptan	760	5.9	
75-18-3	Dimethyl Sulfide	3,000	7.6	
75-15-0	Carbon Disulfide	ND	4.7	
624-92-0	Dimethyl Disulfide	4,100	5.8	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

# **RESULTS OF ANALYSIS**

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Client:

**New-Indy Catawba LLC** 

Client Sample ID: 3A-TRS Duplicate 1115

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P2103465-013

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Collected: 6/24/21

Date Received: 6/29/21 Date Analyzed: 7/1/21

Liquid Amount:

1.0 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.050 ml(s)

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	190,000	170	
74-93-1	Methyl Mercaptan	840	240	
75-18-3	Dimethyl Sulfide	310	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	680	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

### RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC

Client Sample ID: 2A-TRS Duplicate 1510

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P2103465-014

Test Code: GC/SCD Reduced Sulfur Analysis Date Collected: 6/24/21

Instrument ID: Agilent 6890A/GC13/SCD Date Received: 6/29/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/1/21

Sample Type: Water Liquid Amount: 1.0 ml(s)

Test Notes:

Purge Volume: 0.30 Liter(s)

Injection Volume(s): 0.050 ml(s)

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	140,000	170	
74-93-1	Methyl Mercaptan	14,000	240	
75-18-3	Dimethyl Sulfide	16,000	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	17,000	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

### RESULTS OF ANALYSIS Page 1 of 1

Client:

**New-Indy Catawba LLC** 

Client Sample ID: 2B-TRS Duplicate 1515

ALS Project ID: P2103465

Client Project ID: DHEC Order

ALS Sample ID: P2103465-015

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Collected: 6/24/21

Date Received: 6/29/21 Date Analyzed: 7/1/21

Liquid Amount:

10 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.20 ml(s)

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	3,200	4.2	
74-93-1	Methyl Mercaptan	94	5.9	
75-18-3	Dimethyl Sulfide	3,000	7.6	
75-15-0	Carbon Disulfide	ND	4.7	
624-92-0	Dimethyl Disulfide	4,400	5.8	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

### **RESULTS OF ANALYSIS** Page 1 of 1

**Client:** 

**New-Indy Catawba LLC** 

Client Sample ID: 3A-TRS 1403

Client Project ID: DHEC Order

Gilbert Gutierrez

ALS Project ID: P2103465

ALS Sample ID: P2103465-016

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst: Sample Type: Test Notes:

Water

Date Collected: 6/25/21 Date Received: 6/29/21 Date Analyzed: 7/1/21

Liquid Amount:

1.0 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

 $0.050 \, \text{ml(s)}$ 

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	180,000	170	
74-93-1	Methyl Mercaptan	1,200	240	
75-18-3	Dimethyl Sulfide	400	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	840	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

### RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC

Client Sample ID: 3A-TRS 1630 ALS Project ID: P2103465
Client Project ID: DHEC Order ALS Sample ID: P2103465-017

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Analyzed: 7/1/21 Liquid Amount:

int: 1.0 ml(s)

Purge Volume:

Date Collected: 6/25/21

Date Received: 6/29/21

0.30 Liter(s)

Injection Volume(s):

0.050 ml(s)

CAS#	Compound	Result	MRL	Data
	-	μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	160,000	170	
74-93-1	Methyl Mercaptan	1,300	240	
75-18-3	Dimethyl Sulfide	ND	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	430	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

# **RESULTS OF ANALYSIS**

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**Client:** 

**New-Indy Catawba LLC** 

Client Sample ID: 3A-TRS 1740

Client Project ID: DHEC Order

ALS Project ID: P2103465

Date Collected: 6/25/21

Date Received: 6/29/21

ALS Sample ID: P2103465-018

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Analyzed: 7/1/21 Liquid Amount:

1.0 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

 $0.050 \, \text{ml(s)}$ 

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	170,000	170	
74-93-1	Methyl Mercaptan	1,300	240	
75-18-3	Dimethyl Sulfide	ND	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	250	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

# **RESULTS OF ANALYSIS**

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Client:

**New-Indy Catawba LLC** 

Client Sample ID: 3A-TRS 1845

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P2103465-019

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst: Sample Type:

Test Notes:

Gilbert Gutierrez Water

Date Collected: 6/25/21

Date Received: 6/29/21 Date Analyzed: 7/1/21

Liquid Amount:

1.0 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

 $0.050 \, \text{ml(s)}$ 

CAS#	Compound	Result	MRL	Data
	-	μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	140,000	170	
74-93-1	Methyl Mercaptan	1,300	240	
75-18-3	Dimethyl Sulfide	ND	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	ND	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

# RESULTS OF ANALYSIS Page 1 of 1

Client: New-Indy Catawba LLC

Client Sample ID: 3A-TRS 0817

Client Project ID: DHEC Order

ALS Project ID: P2103465-020

Test Code: GC/SCD Reduced Sulfur Analysis Date Collected: 6/25/21
Instrument ID: Agilent 6890A/GC13/SCD Date Received: 6/29/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/1/21

Sample Type: Uquid Amount: 1.0 ml(s)

Test Notes:

Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.050 ml(s)

CAS#	Compound	Result	MRL	Data
	-	μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	190,000	170	
74-93-1	Methyl Mercaptan	790	240	
75-18-3	Dimethyl Sulfide	ND	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	ND	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

# **RESULTS OF ANALYSIS**

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Client:

**New-Indy Catawba LLC** 

Client Sample ID: 3A-TRS 0924

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P2103465-021

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst: Sample Type: Test Notes:

Gilbert Gutierrez

Water

Date Collected: 6/25/21 Date Received: 6/29/21

Date Analyzed: 7/9/21

Liquid Amount:

1.0 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.10 ml(s)

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	130,000	84	
74-93-1	Methyl Mercaptan	560	120	
75-18-3	Dimethyl Sulfide	170	150	
75-15-0	Carbon Disulfide	ND	93	
624-92-0	Dimethyl Disulfide	ND	120	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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# RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC

Client Sample ID: 3A-TRS 1030 ALS Project ID: P2103465
Client Project ID: DHEC Order ALS Sample ID: P2103465-022

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst: Sample Type: Gilbert Gutierrez

Test Notes:

Water

Date Collected: 6/25/21 Date Received: 6/29/21 Date Analyzed: 7/9/21

Liquid Amount:

1.0 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.10 ml(s)

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	150,000	84	
74-93-1	Methyl Mercaptan	710	120	
75-18-3	Dimethyl Sulfide	170	150	
75-15-0	Carbon Disulfide	ND	93	
624-92-0	Dimethyl Disulfide	ND	120	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

# **RESULTS OF ANALYSIS**

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**Client:** 

**New-Indy Catawba LLC** 

Client Sample ID: 2A-TRS 1035

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P2103465-023

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Collected: 6/25/21

Date Received: 6/29/21 Date Analyzed: 7/9/21

Liquid Amount:

1.0 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.10 ml(s)

CAS#	Compound	Result	MRL	Data
	-	μg/L	μg/L	Data Qualifier
7783-06-4	Hydrogen Sulfide	130,000	84	
74-93-1	Methyl Mercaptan	12,000	120	
75-18-3	Dimethyl Sulfide	12,000	150	
75-15-0	Carbon Disulfide	ND	93	
624-92-0	Dimethyl Disulfide	11,000	120	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

# **RESULTS OF ANALYSIS**

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**Client:** 

**New-Indy Catawba LLC** 

Client Sample ID: 2B-TRS 1040

Client Project ID: DHEC Order

ALS Project ID: P2103465

Date Collected: 6/25/21

Date Received: 6/29/21

ALS Sample ID: P2103465-024

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Analyzed: 7/9/21 Liquid Amount:

Purge Volume:

10 ml(s)

0.30 Liter(s)

Injection Volume(s):

0.20 ml(s)

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	3,300	4.2	
74-93-1	Methyl Mercaptan	100	5.9	
75-18-3	Dimethyl Sulfide	2,400	7.6	
75-15-0	Carbon Disulfide	ND	4.7	
624-92-0	Dimethyl Disulfide	3,600	5.8	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

# RESULTS OF ANALYSIS Page 1 of 1

t: New-Indy Catawba LLC

**Client:** 

Client Sample ID: 2A-TRS 1205

Client Project ID: DHEC Order

ALS Project ID: P2103465-025

Test Code: GC/SCD Reduced Sulfur Analysis Date Collected: 6/25/21
Instrument ID: Agilent 6890A/GC13/SCD Date Received: 6/29/21

Analyst: Gilbert Gutierrez Date Analyzed: 7/9/21
Sample Type: Water Liquid Amount: 1.0

Sample Type: Water Liquid Amount: 1.0 ml(s)
Test Notes: Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.10 ml(s)

CAS#	Compound	Result	MRL	Data
	_	μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	120,000	84	
74-93-1	Methyl Mercaptan	10,000	120	
75-18-3	Dimethyl Sulfide	12,000	150	
75-15-0	Carbon Disulfide	ND	93	
624-92-0	Dimethyl Disulfide	9,600	120	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

# RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC

Client Sample ID: 2B-TRS 1210 ALS Project ID: P2103465
Client Project ID: DHEC Order ALS Sample ID: P2103465-026

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst: Sample Type: Gilbert Gutierrez Water

Test Notes:

GC/SCD Reduced Sulfur Analysis

Date Collected: 6/25/21 Date Received: 6/29/21 Date Analyzed: 7/9/21

Liquid Amount:

10 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

1.0 ml(s)

CAS#	Compound	Result	MRL	Data
	-	μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	550	0.84	
74-93-1	Methyl Mercaptan	4.8	1.2	
75-18-3	Dimethyl Sulfide	1,900	1.5	
75-15-0	Carbon Disulfide	2.0	0.93	
624-92-0	Dimethyl Disulfide	3,000	1.2	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# **RESULTS OF ANALYSIS**

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Client:

**New-Indy Catawba LLC** 

Client Sample ID: 3A-TRS 1200

Client Project ID: DHEC Order

ALS Project ID: P2103465

Date Collected: 6/25/21

Date Received: 6/29/21

ALS Sample ID: P2103465-027

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Analyzed: 7/9/21

Liquid Amount: Purge Volume: 1.0 ml(s)

Injection Volume(s):

0.30 Liter(s) 0.10 ml(s)

CAS#	Compound	Result	MRL	Data
	-	μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	130,000	84	
74-93-1	Methyl Mercaptan	620	120	
75-18-3	Dimethyl Sulfide	340	150	
75-15-0	Carbon Disulfide	ND	93	
624-92-0	Dimethyl Disulfide	550	120	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

0.10 ml(s)

Injection Volume(s):

#### ALS ENVIRONMENTAL

# RESULTS OF ANALYSIS

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Client: New-Indy Catawba LLC

Client Sample ID: 3A-TRS 1255

Client Project ID: DHEC Order

ALS Project ID: P2103465-028

Test Code: GC/SCD Reduced Sulfur Analysis Date Collected: 6/25/21
Instrument ID: Agilent 6890A/GC13/SCD Date Received: 6/29/21
Analyst: Gilbert Gutierrez Date Analyzed: 7/9/21

Sample Type: Water Liquid Amount: 1.0 ml(s)

Test Notes:

Purge Volume: 0.30 Liter(s)

Result **MRL** CAS# Compound Data  $\mu g/L$  $\mu g/L$ Qualifier 140,000 7783-06-4 Hydrogen Sulfide 84 730 120 74-93-1 Methyl Mercaptan 75-18-3 Dimethyl Sulfide 180 150 75-15-0 Carbon Disulfide ND 93 Dimethyl Disulfide 120 624-92-0 ND

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

### **RESULTS OF ANALYSIS**

Page 1 of 1

**Client:** 

New-Indy Catawba LLC

Client Sample ID: 2A-TRS 1345

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P2103465-029

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Collected: 6/25/21

Date Received: 6/29/21 Date Analyzed: 7/9/21

Liquid Amount:

1.0 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.050 ml(s)

CAS#	Compound	Result	MRL	Data
	-	μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	190,000	170	
74-93-1	Methyl Mercaptan	22,000	240	
75-18-3	Dimethyl Sulfide	22,000	300	
75-15-0	Carbon Disulfide	ND	190	
624-92-0	Dimethyl Disulfide	23,000	230	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

## **RESULTS OF ANALYSIS**

Page 1 of 1

Client:

**New-Indy Catawba LLC** 

Client Sample ID: 2B-TRS 1350

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P2103465-030

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Collected: 6/25/21 Date Received: 6/29/21

Date Analyzed: 7/9/21 Liquid Amount:

10 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.30 ml(s)

CAS#	Compound	Result	MRL	Data
	-	μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	3,500	2.8	
74-93-1	Methyl Mercaptan	260	3.9	
75-18-3	Dimethyl Sulfide	2,500	5.1	
75-15-0	Carbon Disulfide	ND	3.1	
624-92-0	Dimethyl Disulfide	4,300	3.9	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

# RESULTS OF ANALYSIS Page 1 of 1

Client: New-Indy Catawba LLC

Client Sample ID: 3A-TRS 1010

ALS Project ID: P2103465

Client Project ID: DHEC Order

ALS Sample ID: P2103465-031

Test Code: GC/SCD Reduced Sulfur Analysis Date Collected: 6/26/21
Instrument ID: Agilent 6890A/GC13/SCD Date Received: 6/29/21

Analyst: Gilbert Gutierrez Date Analyzed: 7/9/21
Sample Type: Water Liquid Amount: 1.0 ml(s)

Test Notes:

Purge Volume: 0.30 Liter(s)
Injection Volume(s): 0.20 ml(s)

CAS#	Compound	Result	MRL	Data Qualifier
	-	μg/L	μg/L	
7783-06-4	Hydrogen Sulfide	90,000	42	
74-93-1	Methyl Mercaptan	1,100	59	
75-18-3	Dimethyl Sulfide	420	76	
75-15-0	Carbon Disulfide	ND	47	
624-92-0	Dimethyl Disulfide	710	58	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

## **RESULTS OF ANALYSIS**

Page 1 of 1

**Client:** 

**New-Indy Catawba LLC** 

Client Sample ID: 3A-TRS 1125

ALS Project ID: P2103465

Date Collected: 6/26/21

Date Received: 6/29/21

Client Project ID: DHEC Order

ALS Sample ID: P2103465-032

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD Gilbert Gutierrez

Analyst: Sample Type: Test Notes:

Water

Date Analyzed: 7/9/21 Liquid Amount:

 $1.0 \, \text{ml(s)}$ 

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.10 ml(s)

CAS#	Compound	Result	MRL	Data
	-	μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	75,000	84	
74-93-1	Methyl Mercaptan	1,700	120	
75-18-3	Dimethyl Sulfide	180	150	
75-15-0	Carbon Disulfide	ND	93	
624-92-0	Dimethyl Disulfide	170	120	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

## **RESULTS OF ANALYSIS**

Page 1 of 1

**Client:** 

New-Indy Catawba LLC

Client Sample ID: 3A-TRS 1230

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P2103465-033

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Collected: 6/26/21

Date Received: 6/29/21 Date Analyzed: 7/9/21

Liquid Amount:

1.0 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.10 ml(s)

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	59,000	84	
74-93-1	Methyl Mercaptan	2,000	120	
75-18-3	Dimethyl Sulfide	170	150	
75-15-0	Carbon Disulfide	ND	93	
624-92-0	Dimethyl Disulfide	ND	120	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

### **RESULTS OF ANALYSIS**

Page 1 of 1

**Client:** 

**New-Indy Catawba LLC** 

Client Sample ID: 3B-TRS 1305

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P2103465-034

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Collected: 6/26/21 Date Received: 6/29/21

Date Analyzed: 7/9/21

Liquid Amount:

10 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

1.0 ml(s)

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	9.4	0.84	
74-93-1	Methyl Mercaptan	7.7	1.2	
75-18-3	Dimethyl Sulfide	37	1.5	
75-15-0	Carbon Disulfide	ND	0.93	
624-92-0	Dimethyl Disulfide	11	1.2	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

# **RESULTS OF ANALYSIS**

Page 1 of 1

Client:

**New-Indy Catawba LLC** 

Client Sample ID: 3A-TRS 1400

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P2103465-035

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst: Sample Type: Gilbert Gutierrez

Test Notes:

Water

Date Collected: 6/26/21

Date Received: 6/29/21 Date Analyzed: 7/9/21

Liquid Amount:

 $1.0 \, \text{ml(s)}$ 

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.10 ml(s)

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	42,000	84	
74-93-1	Methyl Mercaptan	1,500	120	
75-18-3	Dimethyl Sulfide	150	150	
75-15-0	Carbon Disulfide	ND	93	
624-92-0	Dimethyl Disulfide	170	120	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

### **RESULTS OF ANALYSIS**

Page 1 of 1

**New-Indy Catawba LLC Client:** 

ALS Project ID: P2103465 Client Sample ID: 3B-TRS 1415 Client Project ID: DHEC Order ALS Sample ID: P2103465-036

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst: Sample Type: Gilbert Gutierrez Water

Test Notes:

Date Collected: 6/26/21 Date Received: 6/29/21 Date Analyzed: 7/9/21

Liquid Amount:

10 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

1.0 ml(s)

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	7.7	0.84	
74-93-1	Methyl Mercaptan	5.8	1.2	
75-18-3	Dimethyl Sulfide	42	1.5	
75-15-0	Carbon Disulfide	ND	0.93	
624-92-0	Dimethyl Disulfide	15	1.2	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

# RESULTS OF ANALYSIS

Page 1 of 1

Client: New-Indy Catawba LLC

Client Sample ID: 3A-TRS 1445
Client Project ID: DHEC Order

ALS Project ID: P2103465
ALS Sample ID: P2103465-037

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Collected: 6/26/21

Date Received: 6/29/21 Date Analyzed: 7/9/21

Liquid Amount:

1.0 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.10 ml(s)

CAS#	Compound	Result	MRL	Data
	•	μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	37,000	84	
74-93-1	Methyl Mercaptan	1,500	120	
75-18-3	Dimethyl Sulfide	ND	150	
75-15-0	Carbon Disulfide	ND	93	
624-92-0	Dimethyl Disulfide	120	120	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

## **RESULTS OF ANALYSIS**

Page 1 of 1

**Client:** 

**New-Indy Catawba LLC** 

Client Sample ID: 3B-TRS 1530

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P2103465-038

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Collected: 6/26/21

Date Received: 6/29/21 Date Analyzed: 7/9/21

Liquid Amount:

10 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

1.0 ml(s)

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	5.4	0.84	
74-93-1	Methyl Mercaptan	5.9	1.2	
75-18-3	Dimethyl Sulfide	47	1.5	
75-15-0	Carbon Disulfide	ND	0.93	
624-92-0	Dimethyl Disulfide	17	1.2	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

# **RESULTS OF ANALYSIS**

Page 1 of 1

Client:

New-Indy Catawba LLC

Client Sample ID: 3A-TRS 1550

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P2103465-039

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Collected: 6/26/21

Date Received: 6/29/21 Date Analyzed: 7/15/21

Liquid Amount:

10 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

0.050 ml(s)

CAS#	Compound	Result	MRL	Data
	-	μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	41,000	17	
74-93-1	Methyl Mercaptan	1,700	24	
75-18-3	Dimethyl Sulfide	190	30	
75-15-0	Carbon Disulfide	22	19	
624-92-0	Dimethyl Disulfide	81	23	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

### **RESULTS OF ANALYSIS** Page 1 of 1

Client:

**New-Indy Catawba LLC** 

Client Sample ID: Method Blank

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P210701-MB

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Collected: NA Date Received: NA

Date Analyzed: 7/01/21

Liquid Amount:

10 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

1.0 ml(s)

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	ND	0.84	
74-93-1	Methyl Mercaptan	ND	1.2	
75-18-3	Dimethyl Sulfide	ND	1.5	
75-15-0	Carbon Disulfide	ND	0.93	
624-92-0	Dimethyl Disulfide	ND	1.2	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

### **RESULTS OF ANALYSIS** Page 1 of 1

**Client: New-Indy Catawba LLC** 

Client Sample ID: Method Blank ALS Project ID: P2103465 ALS Sample ID: P210709-MB Client Project ID: DHEC Order

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Collected: NA

Date Received: NA Date Analyzed: 7/09/21

Liquid Amount:

10 ml(s)

Purge Volume: Injection Volume(s): 0.30 Liter(s) 1.0 ml(s)

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	ND	0.84	
74-93-1	Methyl Mercaptan	ND	1.2	
75-18-3	Dimethyl Sulfide	ND	1.5	
75-15-0	Carbon Disulfide	ND	0.93	
624-92-0	Dimethyl Disulfide	ND	1.2	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

### **RESULTS OF ANALYSIS** Page 1 of 1

**Client:** 

**New-Indy Catawba LLC** 

Client Sample ID: Method Blank

Client Project ID: DHEC Order

ALS Project ID: P2103465

ALS Sample ID: P210715-MB

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID:

Agilent 6890A/GC13/SCD

Analyst:

Gilbert Gutierrez

Sample Type: Test Notes:

Water

Date Collected: NA Date Received: NA

Date Analyzed: 7/15/21

Liquid Amount:

10 ml(s)

Purge Volume:

0.30 Liter(s)

Injection Volume(s):

1.0 ml(s)

CAS#	Compound	Result	MRL	Data
		μg/L	μg/L	Qualifier
7783-06-4	Hydrogen Sulfide	ND	0.84	
74-93-1	Methyl Mercaptan	ND	1.2	
75-18-3	Dimethyl Sulfide	ND	1.5	
75-15-0	Carbon Disulfide	ND	0.93	
624-92-0	Dimethyl Disulfide	ND	1.2	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

Date Collected: NA

# ALS ENVIRONMENTAL

# LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY Page 1 of 1

Client: New-Indy Catawba LLC

ALS Project ID: P2103465 Client Sample ID: Duplicate Lab Control Sample

ALS Sample ID: P210701-DLCS Client Project ID: DHEC Order

Test Code: GC/SCD Reduced Sulfur Analysis

Agilent 6890A/GC13/SCD Date Received: NA Instrument ID:

Analyst: Gilbert Gutierrez Date Analyzed: 7/01/21

Liquid Amount: 10.0 ml(s) Sample Type: Water Test Notes: Purge Volume: 0.30 Liter(s)

Injection Volume:  $0.10 \, ml(s)$ 

		Spike Amount	Re	esult			ALS			
CAS#	Compound	LCS / DLCS	LCS	DLCS	DLCS % Recovery		Acceptance	RPD	RPD	Data
		ug/L	ug/L	ug/L	LCS	DLCS	Limits		Limit	Qualifier
7783-06-4	Hydrogen Sulfide	413	396	440	96	107	68-129	11	16	
74-93-1	Methyl Mercaptan	620	631	718	102	116	69-136	13	17	

## ALS ENVIRONMENTAL

# LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY Page 1 of 1

New-Indy Catawba LLC Client:

Client Sample ID: Duplicate Lab Control Sample ALS Project ID: P2103465 Client Project ID: DHEC Order ALS Sample ID: P210709-DLCS

Test Code: GC/SCD Reduced Sulfur Analysis Date Collected: NA Instrument ID: Agilent 6890A/GC13/SCD Date Received: NA

Analyst: Gilbert Gutierrez

Date Analyzed: 7/09/21 Sample Type: Water Liquid Amount: 10.0 ml(s) Test Notes: Purge Volume: 0.30 Liter(s)

Injection Volume: 0.10 ml(s)

		Spike Amount Result ALS										
CAS#	Compound	LCS / DLCS	LCS	DLCS	% Recovery A		Acceptance	RPD	RPD	Data		
		ug/L	ug/L	ug/L	LCS	DLCS	Limits		Limit	Qualifier		
7783-06-4	Hydrogen Sulfide	413	499	430	121	104	68-129	15	16	*****		
74-93-1	Methyl Mercaptan	620	822	703	133	113	69-136	16	17			

# **ALS ENVIRONMENTAL**

# LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY Page 1 of 1

Client: New-Indy Catawba LLC

Client Sample ID: Duplicate Lab Control Sample ALS Project ID: P2103465

Client Project ID: DHEC Order ALS Sample ID: P210715-DLCS

Test Code:

GC/SCD Reduced Sulfur Analysis

Instrument ID: Analyst:

Agilent 6890A/GC13/SCD

Sample Type:

Gilbert Gutierrez

Test Notes:

Water

Date Analyzed: 7/15/21 Liquid Amount: 10.0 ml(s) Purge Volume: 0.30 Liter(s)

Injection Volume: 0.30 Liter(s)

Date Collected: NA

Date Received: NA

			Spike Amount Result ALS								
	CAS # Compound		LCS / DLCS	LCS	DLCS	% Recovery		Acceptance	RPD	RPD	Data
			ug/L	ug/L	ug/L	LCS	DLCS	Limits		Limit	Qualifier
	7783-06-4	Hydrogen Sulfide	413	483	487	117	118	68-129	0.9	16	
	74-93-1	Methyl Mercaptan	620	815	806	131	130	69-136	0.8	17	



# APPENDIX H QUALITY CONTROL DATA



# **EQUIPMENT CALIBRATIONS**

# S - Type Pitot Tube Inspection Data Form

Pitot Tube ID NO. P172 Length	probe ID.No. AUB-PR-5B	If all Criteria PASS Cp is equal to 0.84
Inspection Date1/6/2021 _ Individual	Conducting Inspection DDS	PASS/FAIL
A-Side Plane Dt A PA	Distance to A Plane (PA) - inches 0.488	PASS PASS
B-Side Plane	Distance to B Plane (PB) - inches 0.488 Pitot OD (D <sub>t</sub> ) - inches 0.375	FA00
1.05 D <sub>t</sub> < P < 1.5 D <sub>t</sub> PA must Equ	ual PB	
Perpendic	Faces Aligned  © YES  NO	PASS
$\begin{pmatrix} 2 \\ 1 \end{pmatrix}$	Angle of Q1 from vertical A Tube-	
В	degrees (absolute) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	PASS
Of and Of must be < 10°	degrees (absolute) 1	PASS
Q1 and Q2 must be ≤ 10°	Angle of B1 from	
	vertical A Tube- degrees (absolute) 1	PASS
2.( )-	Angle of B1 from  + or -)  vertical B Tube-	
	degrees (absolute) 0	PASS
B1 or B2 must be ≤ 5°	Y = 1	
<u></u>	A = 0.976	
Z must be < 0.125 inches		
	$Z = A \sin Y = \frac{0.0170}{1.000}$	PASS
W must be ≤ 0.03125 inches	W = A sin O = 0.0170	PASS
Sampling Nozzle (①) D	Distance between Sample  Nozzle and Pitot (X) - inches  N/A	PASS
X must be ≥ 0.75 inches		
Impact Pressure Opening Plane	Impact Pressure	
Nozzle Entry Plane	Opening Plane is above the Nozzle NA	PASS
→	Entry Plane	
Temperature Sensor	_	
Dt Type S Pitot Tube	Thermocouple meets	PASS
Sample Probe	in the adjacent figure ONA	
Temperature Sensor	- CV50 C ND	
Dt Type S Pitot Tube	Thermocouple meets () YES () NO the Distance Criteria	
Sample Probe	in the adjacent figure	
Q		
PC	OSTTEST CHECK	
Client New Indy Catamba	Work Order Number 15730.001.00	. 8
Date 7.16.20	YES	NO
	Checked By 5UA	

Integrated Air Services

# **Stack Temperature Sensor Calibration Data**

	Choose Refe	erence The	ermome	ter Belo	ow:
	Digital Thermometer - 0	Omega Mode	I CL3515	R (Serial#	¢ 06000183)
✓	Digital Thermometer - C	Omega Mode	el CL3515 <b>i</b>	R (Serial#	‡ 12000230)
	Thermocouple Number:		Length:	5'	
	Ambient Temperature, °F: Calibrator:				
eference oint	Reference Temperature	Thermocouple Temperature			Temperature Difference
umber	°F	°F			%
- A	57	57			0.00
В	57	57			0.00
C	57	57			0.00
. A	38	38			0.00
В	38	38			0.00
C	38	38			0.00
		211			0.00
A	211				0.00
В	211	210			
С	211	210			0.15
emp Diff (%) =	(Ref Temp, °F + 460) - ( Ref Temp, °F +	Therm Temp	°F + 460)	x 100	
	Ref Temp,° F +	460			
Are all	temperature differences less tha	n +/- 1.5% ?	YES		
	POSTTEST STACK TEMP	ERATURE SE	NSOR CALI	BRATION	DATA
	Client: Work Order Number: Date: Calibrator:	7-16:	21		
Ambient	Reference	Thermocouple		Temperatu	re
Гетр,° F	Temp,° F	Temp,° F		Diff, %	
75	7.	76		$\sim$	
1)	76	/ 6			

If no, calculations done once with recorded values and once with corrected values

# S - Type Pitot Tube Inspection Data Form

Pitot Tube ID NO. P77 Length	Probe ID.No. AUB-PR-6C	If all Criteria PASS Cp is equal to 0.84
Inspection Date 12/29/2020 Individual Condu	cting InspectionDDS	PASS/FAIL
	nce to A Plane (PA) - inches	PASS PASS
Are Open Faces Perpendicular to	Aligned the Tube Axis	PASS
Angl	degrees (absolute) 1 e of Q2 from vertical B Tubedegrees (absolute) 2	PASS PASS
Q1 and Q2 must be $\leq 10^{\circ}$ B  B  B  B  B  B  B  B  B  B  B  B  B	Angle of B1 from vertical A Tube- degrees (absolute) 1	PASS
B1 or B2 must be $\leq 5^{\circ}$	Angle of B1 from vertical B Tube- degrees (absolute)  Y = 1	PASS
Z must be ≤ 0.125 inches	A = 0 868	
	$Z = A \sin Y = 0.0151$	PASS
W must be ≤ 0.03125 inches	W = A sin O =0.0151	PASS
	ince between Sample de and Pitot (X) - inchesN/A	PASS
Operation Plane Operation Plane	act Pressure hing Plane is te the Nozzle ty Plane	PASS
Temperature Sensor  Type S Pitot Tube  The	mocouple meets ( ) YES ( NO Distance Criteria e adjacent figure ( ) NA	
Dt Type S Pitot Tube the	mocouple meets Distance Criteria e adjacent figure  (i) YES NO NA	PASS
POSTTE	ST CHECK	. 6

Client 16	w Indy Catawha	Work Order Number 15770.001.00	8
Date	7-16-21	Damage Found?YES	No
		Checked By TA	



# **Stack Temperature Sensor Calibration Data**

	Choose Refe	erence The	ermome	ter Belo	ow:
	Digital Thermometer - C	Omega Mode	CL3515	R (Serial#	¢ 06000183)
✓	Digital Thermometer - C	Omega Mode	I CL3515	R (Serial#	‡ 12000230)
	Thermocouple Number:	AUB-PR-6C 29-Dec-20	Length:	6'	
	Ambient Temperature, °F: Calibrator:				
Reference	Reference	Thermocouple			Temperature
Point	Temperature	Temperature			Difference
Number	° F	° F			%
1 - A	65	65			0.00
В	65	65			0.00
C	65	65			0.00
2 - A	34	34			0.00
В	34	34			0.00
C	34	34			0.00
3 - A	210	210			0.00
В	210	210			0.00
C	210	210			0.00
Temp Diff (%) =	(Ref Temp, °F + 460) - (	Therm Temp	°F + 460)_	x 100	
	Ref Temp,° F +	460			
Are all	temperature differences less tha	n +/- 1.5% ?	YES		
	POSTTEST STACK TEMP	ERATURE SEN	NSOR CALI	BRATION	DATA
	Client: Work Order Number: Date: Calibrator:		21	0 %	
Ambient	Reference	Thermocouple		Temperatu	re
Temp,° F	Temp,° F	Temp,° F		Diff, %_	
76_					

If no, calculations done once with recorded values and once with corrected values

# S - Type Pitot Tube Inspection Data Form

Pitot Tube ID NO. P320 Leng	gth 8' Probe ID.No. A	UB-PR-8L	orio DASS Co io ogual to 0.84
Inspection Date 1/5/2021 Individu	al Conducting InspectionDD		eria PASS Cp is equal to 0.84
A-Side Plane  Di A  PA  B PB  B-Side Plane	Distance to A Plane (PA) - inches  Distance to B Plane (PB) - inches  Pitot OD (D <sub>t</sub> ) - inches	0.472 PASS 0.472 PASS 0.375	PASS/FAIL
1.05 D <sub>t</sub> < P < 1.5 D <sub>t</sub> PA must E			
	en Faces Aligned dicular to the Tube Axis	O NO PASS	
Q1 O1 O	Angle of Q1 from vertical A Tube- degrees (absolute)  Angle of Q2 from vertical B Tube-	1PASS	
	degrees (absolute)	1 PASS	
Q1 and Q2 must be $\leq 10^{\circ}$ B  B  B  B  B  B  B  B  B  B  B  B  B	Angle of B1 from vertical A Tubedegrees (absolute)	0 PASS	
	Angle of B1 from vertical B Tube-degrees (absolute)	0 PASS	
B1 or B2 must be ≤ 5°	Y = 1 O =	0	
	A =0.943		
Z must be ≤ 0.125 inches	$Z = A \sin Y =$	0.0165 PASS	
W must be < 0.03125 inches	W = A sin O =	0.0000 PASS	
W must be ≤ 0.03125 inches	VV = 7 (3)11 (3)		
X must be ≥ 0.75 inches	Distance between Sample Nozzle and Pitot (X) - inches	N/A PASS	
Impact Pressur Opening Plane		O NO PASS	
Temperature Sensor  Type S Pitol Tube  Sample Probe	Thermocouple meets (a) YES the Distance Criteria in the adjacent figure (b) N/	O NO PASS	
Temperature Sensor  Dt Type S Pitot Tube  Sample Probe	Thermocouple meets ( ) YES the Distance Criteria in the adjacent figure ( ) No.	O NO	

### POSTTEST CHECK

Client V	lew Indy Contamba	Work Order Number (5730 001.0	108
Date _	7-16-21	YES	No
		Checked By TA	

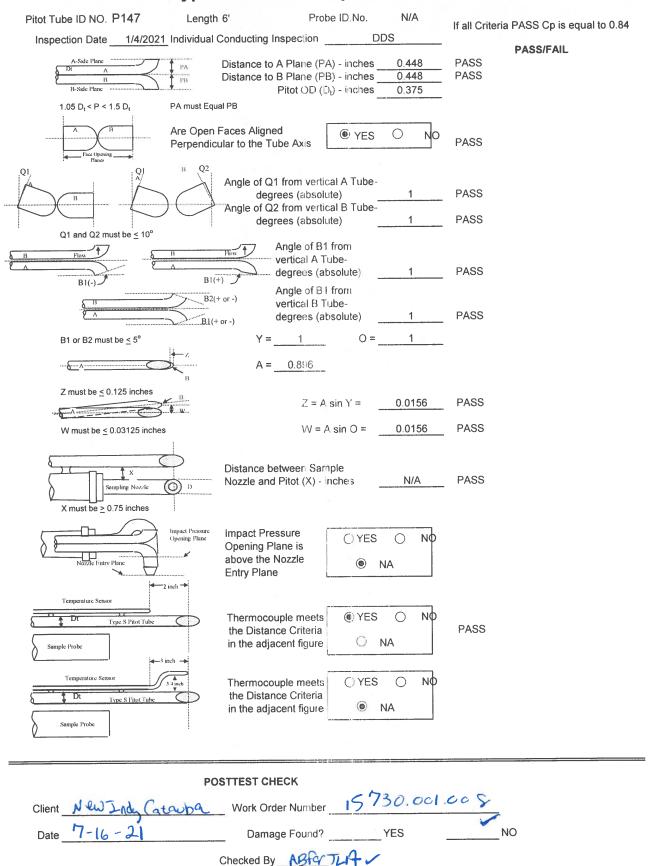


# Stack Temperature Sensor Calibration Data

	Choose Refe	erence Th	ermome	ter Belo	w:
	Digital Thermometer - C	Omega Mode	el Cl.3515F	R (Serial#	06000183
<b>V</b>	Digital Thermometer - C	Omega Mode	el CL3515F	R (Serial#	12000230
	Thermocouple Number:		Length:	8'	
	Ambient Temperature, °F: Calibrator:	63			
eference oint	Reference Temperature	Thermocouple Temperature			Temperature Difference
lumber	° F	° F			%
- A	63	62			0.19
В	63	62			0.19 0.19
C	63	62			0.19
A	38	38			0.00
В	38	38			0.00
C	38	38			
- A	211	211			0.00
В	211	211			
С	211	211			0.00
emp Diff (%) =	(Ref Temp, °F + 460) - (	Therm Temp	°F + 460)	x 100	
-	(Ref Temp, °F + 460) - ( Ref Temp, °F +	- 460			
Are all	temperature differences less tha	n +/- 1.5% ?	YES		
	POSTTEST STACK TEMP		NSOR CALI	BRATION	DATA
	Client: Work Order Number: Date Calibrator		21	<b>c.</b>	
Ambient	Reference	Thermocouple		Temperatu	re
Гетр,° F	Temp,° F	Temp,° F		Diff, %	

If no, calculations done once with recorded values and once with corrected values

# S - Type Pitot Tube Inspection Data Form





# AO10-6pt-5-6-2021 5/6/2022

# METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
 Record barometric pressure before and after ralibration properties.

Integrated Air Services

- 3) Run at tested vacuum (from Orifice Calibration Report), for a period of time
- necessary to achieve a minimum total volume of 5 cubic feet
- 4) Record readings in colored boxes below, other columns are automatically calculated.

Barometer ID 200567181		(4)	ΔH@		1.657	1.646	1,711	1,778	1.815	1,786	1.732
		(3)	>		0.992	0.984	0.983	0.991	0.986	0.996	0.988
AVG (P <sub>bar</sub> )		(2)	V <sub>cr</sub> (STD)		11.227	12.769	12.34	11.251	34.233	24.511	AVG =
29.44		(1)	V <sub>m</sub> (STD)		11.321	12.976	12.558	11.359	34.730	24.612	
29.41		DGM ∆H	(in H <sub>2</sub> O)		0.26	0.54	76.0	1.40	2.50	3.60	
SURE (in Hg): Calibrated by:	ELAPSED	TIME (MIN)	θ		38	30	22	17	39	23	
BAROMETRIC PRESSURE (in Hg): Calibrated by:		Avg DGM F° TIME (MIN)	m_	<u> </u>	99	7.1	69	69	69	89	
BAROMET			FINAL		67	71	69	69	69	69	
_		DGM F°	INITIAL FINAL		92	20	69	69	69	29	
		AMBIENT	٩L		65	69	88	67	29	99	
SERIAL # 1557659 SERIAL # 1331s & 1825		3)	NET (V <sub>m</sub> )		11.458	13.236	12.760	11.529	35.155	24.798	
		DGM READINGS (FT3)	FINAL		622.158	724.636	711.015	697.885	685.402	649.402	
METER CRITICAL ORIFICE SET		DGN	INITIAL		610.700	711.400	698.255	686.356	650.247	624.604	
	TESTED	VACUUM	(in Hg)		21	23	22	21	61	17	
DATE: 6-May-2021 ART #: AO10	¥	FACTOR	(AVG)		0.2300	0.3326	0.4379	0.5162	0.6846	0.8304	
DATE:			RUN#		-	2	м	4	vs	9	l
DATE: METER PART #:			ORIFICE #		ω	12	16	19	25	31	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:

The following equations are used to calculate the standard volumes of air passed through the DGM, V<sub>m</sub> (std), and the critical orifice, V<sub>a</sub> (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

**PASS PASS PASS** 

Individual ∆H<sub>®</sub> values 0.15 from average? Individual Y's .02 from average?

Average Y value +/-.02 of 1.000? = Net volume of gas sample passed through DGM, corrected to standard conditions  $T_m = Absolute DGM$  avg. temperature ( $^{\circ}R$  - English,  $^{\circ}K$  - Metric) K<sub>1</sub> = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric) P<sub>bar</sub> + (ΔH/13.6) χ ,<  $V_m$  (std) =

Ξ

= Volume of gas sample passed through the critical orifice, corrected to standard conditions  $\tau_{amb} = Absolute ambient temperature (^R - English, ^K - Metric)$ K' = Average K factor from Critical Orifice Calibration = DGM calibration factor ¥ V<sub>m</sub> (std) V<sub>cr</sub> (std) V<sub>cr</sub> (std) = 8 3

Next Calibration Due By: ΔH 0.0319 T<sub>m</sub> Θ<sup>2</sup> P<sub>bar</sub> Y<sup>2</sup> V<sub>m</sub><sup>2</sup>

= ØH∇

4

# METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
 Record barometric pressure before and after calibration procedure.

Integrated Air Services

- 3) Run at tested vacuum (from Orifice Calibration Report), for a period of time
  - necessary to achieve a minimum total volume of 5 cubic feet.
- 4) Record readings in colored boxes below, other columns are automatically calculated.

Barometer ID 200567181		4) Á	D	1.669	1.751	1.831	1,791	1.906	1.854	1.800	
		ල >		1.000	0.997	1.002	1.016	0.992	1.012	1.003	PASS
AVG (P <sub>bar</sub> ) 3 29.24		(2) V(STD)		8.983	5.85	5.496	16.288	6.021	10.442	AVG =	
FINAL 29.21		(1) V_ (STD)		8.983	5.866	5.483	16.024	6.071	10.316		rom average?
29.27		(in H <sub>2</sub> O)		0.26	0.57	1.03	1.40	2.60	3.70		Individual Ys .02 from average?
SURE (in Hg): Calibrated by:	ELAPSED	TIME (MIN)		31	41	10	25	7	10		Indi
BAROMETRIC PRESSURE (in Hg): Calibrated by:		Avg DGM F" TIME (MIN)		80	83	8	62	83	82		
BAROME	1	FINAL		80	83	2	79	83	82		
		DGM F		79	83	83	78	83	81		(std), and
		AMBIENT		79	82	88	11	82	84		cal orifice, V <sub>α</sub> (
6842580 1331s & 1825		r) NET (V.,)		9.384	6.163	5.759	16.661	6.340	10.724		" (std), and the criti
METER SERIAL #:		DGM READINGS (FT*)		945.384	976.463	984.290	935.661	969.840	959.124		through the DGM, V spreadsheet above
METER CRITICAL ORIFICE SET		DG		936.000	970.300	978.531	919.000	963.500	948.400		USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS: The following equations are used to calculate the standard volumes of air passed through the DGM, V <sub>m</sub> (std), and the critical orifice, V <sub>w</sub> (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.
	TESTED	(in Ha)	5	24	21	21	50	17	16		IBRATION STAN e the standard vo ons are automatic
4-May-2021 AO23	¥	FACTOR		0.2300	0.3326	0.4379	0.5162	0.6846	0.8304		USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS: The following equations are used to calculate the standard volumes of the DGM calibration factor, Y. These equations are automatically calcu
		*	1	+	7	т	4	'n	9		CRITICAL 1 equations bration fac
DATE: METER PART #:		ORIFICE #		80	12	16	19	25	31		USING THE The following the DGM cali

Average Y value +/-.02 of 1.000? = Net volume of gas sample passed through DGM, corrected to standard conditions T<sub>m</sub> = Absolute DGM avg. temperature (°R - English, °K - Metric) K<sub>1</sub> = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric) P<sub>bar</sub> + (∆H/13.6) . Σ V<sub>m</sub> (std) = Ξ

= Volume of gas sample passed through the critical orifice, corrected to standard conditions

 $T_{amb} = Absolute ambient temperature (^R - English, ^K - Metric)$ 

**PASS** PASS

Individual  $\Delta H_{f g}$  values 0.15 from average?

K' = Average K' factor from Critical Orifice Calibration DGM calibration factor V<sub>cr</sub> (std) ල

ᅶ

V<sub>cr</sub> (std) =

8

5/4/2022 Next Calibration Due By:

> ΔH 0.0319 T<sub>m</sub> Θ<sup>2</sup> P<sub>bar</sub> Y<sup>2</sup> V<sub>m</sub><sup>2</sup> = ®H∇ 4

AO25-6 Point - 5-14-2021

# METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.

Integrated Air Services

Record barometric pressure before and after calibration procedure.

5

- Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet
- Record readings in colored boxes below, other columns are automatically calculated.

4

Barometer ID 200567181		(4)	ΔH@		1.900	1.943	2.102	2,028	2.137	2.183	2.049
		(3)	>		1.005	1.001	1.001	1.001	0.997	0.998	1.000
AVG (P <sub>bar</sub> ) 29.59		(2)	V <sub>cr</sub> (STD)		8.288	8.552	17.437	15.293	8.793	14.933	AVG =
FINAL 29.59		£)	V <sub>m</sub> (STD)		8.248	8.547	17.412	15.285	8.821	14.969	
29.59		DGM ∆H	(in H <sub>2</sub> O)		0.30	0.64	1.20	1.60	2.95	4.40	
SURE (in Hg): Calibrated by:	ELAPSED	TIME (MIN)	θ		28	20	31	23	10	14	
BAROMETRIC PRESSURE (in Hg): Calibrated by:		Avg DGM F° TIME (MIN)	Tm		7.1	71	74	69	73	72	
BAROME			FINAL		71	71	74	69	73	72	
		DGM F°	INITIAL FINAL	7	20	7.1	73	88	72	72	
		AMBIENT	F٥		69	70	7.1	88	77	7.1	
9717.61 1331s & 1825		ريا	NET (V <sub>m</sub> )		8.372	8.676	17.733	15,406	8.928	15.083	
METER SERIAL #: CE SET SERIAL #:		DGM READINGS (FT <sup>3</sup> )	FINAL		937.472	946.387	989.873	928.906	971.830	962.183	
METER SERIAL #: CRITICAL ORIFICE SET SERIAL #:		DG	INITIAL		929.100	937.711	972.140	913.500	962.902	947.100	
	TESTED	VACUUM	(in Hg)		23	21	21	19	17	15	
14-May-2021 AO25	¥	FACTOR	(AVG)		0.2300	0.3326	0.4379	0.5162	0.6846	0.8304	
			RUN #		-	2	ю	4	ω	9	j
DATE: METER PART #;			ORIFICE #		80	12	16	19	25	31	

The following equations are used to calculate the standard volumes of air passed through the DGM,  $V_m$  (std.), and the critical orifice,  $V_{\sigma}$  (std.), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above. USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:

**PASS PASS** PASS

Individual  $\Delta H_{f e}$  values 0.15 from average? Individual Ys .02 from average?

Average Y value +/-.02 of 1.000? = Net volume of gas sample passed through DGM, corrected to standard conditions  $T_m = Absolute DGM$  avg. temperature ( $^{\circ}R$  - English,  $^{\circ}K$  - Metric) K<sub>1</sub> = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric) P<sub>bar</sub> + (∆H/13.6) > =  $V_m$  (std) =

Ξ

P<sub>bar</sub> θ  $\mathsf{T}_{\mathsf{amb}}$ V<sub>cr</sub> (std) =

8

Volume of gas sample passed through the critical orifice, corrected to standard conditions  $T_{amb} = Absolute$  ambient temperature ( ${}^{o}R$  - English,  ${}^{o}K$  - Metric)

K' = Average K' factor from Critical Orifice Calibration DGM calibration factor V<sub>cr</sub> (std) V<sub>m</sub> (std) ල

5/14/2022 Next Calibration Due By:

> ΔH 0.0319 T<sub>m</sub> Θ<sup>2</sup> P<sub>bar</sub> Y2 V<sub>m</sub>² = øH∇ 4





# **CALIBRATION GAS CERTIFICATES**



Airgas USA, LLC 15730.001.008 630 United Drive Pulp Dryer, #3 Paper Machine,
Durham, NC 27713

#2-3 SDTVs, & #1-2 CBs
Emission Report Airgas.com

# **CERTIFICATE OF ANALYSIS Grade of Product: EPA Protocol**

Part Number: Cylinder Number: E03NI80E15A0138

XC013544B

124 - Durham (SAP) - NC

**PGVP Number:** Gas Code:

Laboratory:

B22021

CO2,O2,BALN

Reference Number: 122-402016392-1

Cylinder Volume:

150.9 CF

Cylinder Pressure:

2015 PSIG

Valve Outlet:

590

Certification Date:

Feb 01, 2021

Expiration Date: Feb 01, 2029

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

			ANALYTICA	L RESULTS					
Compon	ent	Requested Concentration	Actual Protocol Concentration Method		Total Relative Uncertainty	Assay Dates			
CARBON	DIOXIDE	10.00 %	10.16 %	G1	+/- 0.6% NIST Traceable	e 02/01/2021			
OXYGEN	OXYGEN 10.00 %		10.14 % G1		+/- 0.7% NIST Traceable	02/01/2021			
NITROGE	NITROGEN Balance								
CALIBRATION STANDARDS									
Туре	Lot ID	Cylinder No	Concentration		Uncertainty	Expiration Date			
NTRM	13060638	CC414571	13.359 % CARBON D	DIOXIDE/NITROGEN	+/- 0.6%	May 14, 2025			
NTRM	10010616	K014963	9.967 % OXYGEN/NI	TROGEN	+/- 0.3%	Apr 19, 2022			
			ANALYTICAL	EQUIPMENT					
Instrume	ent/Make/Mod	el	<b>Analytical Principl</b>	е	Last Multipoint Cal	ibration			
Horiba VA	-5001 CO2 BF8	9GV17	Nondispersive Infrared	d (NDIR)	Jan 06, 2021				
Horiba MF	PA510 O2 41499	9150042	Paramagnetic		Jan 07, 2021				







# **CERTIFICATE OF ANALYSIS Grade of Product: EPA Protocol**

Part Number: Cylinder Number: E03NI60E15A0286

Laboratory:

124 - Durham (SAP) - NC

B22021

PGVP Number: Gas Code:

CC275468

CO2,O2,BALN

Reference Number: 122-402008217-1

Cylinder Volume:

159.6 CF **2015 PSIG** 

Cylinder Pressure: Valve Outlet:

590

Certification Date:

Jan 22, 2021

**Expiration Date:** Jan 22, 2029

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

			ANALYTICA	L RESULTS			
Component		Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates	
CARBON DIOXIDE		20.00 % 20.27 %		G1	+/- 0.6% NIST Traceable		
OXYGEN		20.00 %	20.24 % G1		+/- 0.9% NIST Traceable	01/22/2021	
NITROGE	N	Balance					
Туре	Lot ID	Cylinder No	CALIBRATION Concentration	STANDARD	S Uncertainty	Expiration Date	
NTRM NTRM	12061508 08010202	CC354696 1D003076	19.87 % CARBON D 23.20 % OXYGEN/N		+/- 0.6% +/- 0.4%	Jan 11, 2024 Jun 01, 2024	
Instrume	ent/Make/Mod	el	ANALYTICAL Analytical Principle	_	Last Multipoint Cal	ibration	
	-5001 CO2 BF8 A510 O2 41499		Nondispersive Infrare Paramagnetic	d (NDIR)	Jan 06, 2021 Jan 07, 2021		



Airgas Specialty Gases Airgas USA, LLC 630 United Drive Durham, NC 27713 Airgas.com

# CERTIFICATE OF ANALYSIS **Grade of Product: EPA Protocol**

Part Number:

E03NI80E15A0138

Cylinder Number: Laboratory:

SG9168283BAL 124 - Durham (SAP) - NC

PGVP Number:

B22021

Gas Code:

CO2, O2, BALN

Reference Number:

122-402016392-1

Cylinder Volume: Cylinder Pressure: 150.9 CF **2015 PSIG** 

Valve Outlet:

590

Certification Date:

Feb 01, 2021

Expiration Date: Feb 01, 2029

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

	14-15 <u></u>		Not use This Cylinder below			
Component Requested Concentratio			ANALYTICA Actual Concentration	L RESULTS Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE 1 OXYGEN 1		10.00 % 10.00 % Balance	10.16 % 10.12 %	G1 G1	+/- 0.6% NIST Traceable +/- 0.5% NIST Traceable	
Type NTRM	Lot ID	Cylinder No	CALIBRATION Concentration 13.359 % CARBON D		+/- 0.6%	Expiration Date May 14, 2025
NTRM	10010616	K014963	9.967 % OXYGEN/NI ANALYTICAL	EQUIPMENT	+/- 0.3%	Apr 19, 2022
Instrument/Make/Model  Horiba VA-5001 CO2 BF89GV17  Horiba MPA510 O2 41499150042			Analytical Principl Nondispersive Infrared Paramagnetic		Last Multipoint Cal Jan 06, 2021 Jan 07, 2021	noration







**Airgas Specialty Gases** Airgas USA, LLC 630 United Drive Durham, NC 27713 Airgas.com

# CERTIFICATE OF ANALYSIS

**Grade of Product: EPA Protocol** 

Part Number: Cylinder Number:

CC454190

CO2,O2,BALN

Laboratory: **PGVP Number:**  124 - Durham (SAP) - NC B22020

Gas Code:

E03NI60E15A0286

Reference Number: 122-401761927-1

Cylinder Volume: Cylinder Pressure: 159.6 CF 2015 PSIG

Valve Outlet:

590

Certification Date:

Mar 16, 2020

Expiration Date: Mar 16, 2028

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no slightficant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

	A	ANALYTICA	L RESULTS		A
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE OXYGEN	20.00 % 20.00 %	20.41 % 19.46 %	G1 G1	+/- 0.7% NIST Traceable +/- 0.5% NIST Traceable	03/16/2020 03/16/2020
NITROGEN	Balance	The state of the second second			the angle of the second second

NITROGEN		Culindar No.	CALIBRATION STANDARDS Concentration	Uncertainty	Expiration Date
NTRM NTRM	12061508 08010202	Cylinder No CC354696 1D003076	19.87 % CARBON DIOXIDE/NITROGEN 23.20 % OXYGEN/NITROGEN	+/- 0.6% +/- 0.4%	Jan 11, 2024 Jun 01, 2024
NIRW	08010202		ANALYTICAL EQUIPMENT		• W • 4

Instrument/Make/Model	ANALYTICAL EQUIPMENT Analytical Principle	Last Multipoint Calibration
	Nondispersive Infrared (NDIR)	Mar 05, 2020
Horiba VIA510 CO2 2L6YXWY0 Horiba MPA510 O2 41499150042	Paramagnetic	Mar 05, 2020
Honba MPA510 OZ 41499150042		







Airgas USA, LLC 630 United Drive Pulp Dryer, #3 Paper Machine, Durham, NC 27713 #2-3 SDTVs, & #1-2 CBs Airgas.com

# **CERTIFICATE OF ANALYSIS Grade of Product: EPA Protocol**

Part Number: Cylinder Number:

PGVP Number:

Laboratory:

Gas Code:

E02NI99E15A0016

CC234516

B22018

SO2, BALN

Cylinder Volume:

Reference Number: 122-401319824-1

Cylinder Pressure: 124 - Durham (SAP) - NC

144.4 CF

Valve Outlet:

**2015 PSIG** 660

Certification Date:

Oct 15, 2018

Expiration Date: Oct 15, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS											
Component Requested Concentration		Requested Concentration	Actual Concentration	Protocol Method	Total Unce	Relative tainty	Assay Dates				
SULFUR D	FUR DIOXIDE 250.0 PPM 242.3 PPM G1 +/- 0.9% NIST Traceable ROGEN Balance		10/08/2018, 10/15/2018								
Туре	Lot ID	Cylinder No	CALIBRATION Concentration	ON STANI	OARDS	Uncertainty	Expiration Date				
NTRM	15060654	CC450608	248.1 PPM SULFU	JR DIOXIDE/NI	TROGEN	+/- 0.6%	Dec 17, 2020				
ANALYTICAL EQUIPM Instrument/Make/Model Analytical Principle					MENT	Last Multipoint Cal	ibration				
Nicolet 670	00 AHR08013	333 SO2	FTIR			Sep 22, 2018					





Airgas USA, LLC 630 United Drive Pulp Dryer, #3 Paper Machine, #2-3 SDTVs, & #1-2 CBs Durham, NC 27713 Airgas.com

# **CERTIFICATE OF ANALYSIS Grade of Product: EPA Protocol**

Part Number:

E02NI99E15A0259

Cylinder Number:

EB0108003

Laboratory:

124 - Durham (SAP) - NC

B22020

**PGVP Number:** Gas Code: SO2, BALN Reference Number: 122-401777520-1

Cylinder Volume:

144.4 CF

Cylinder Pressure:

2015 PSIG

Valve Outlet:

660

Certification Date:

Apr 06, 2020

Expiration Date: Apr 06, 2028

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS										
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates					
SULFUR DIOXIDE NITROGEN	450.0 PPM Balance	457.9 PPM	G1	+/- 0.8% NIST Traceable	03/30/2020, 04/06/2020					
Type Lot	ID Cylind		TON STAND	OARDS Uncertainty	Expiration Date					
Instrument/Make/N	lodol	ANALYTI( Analytical Pri	CAL EQUIP	MENT Last Multipoint (	Calibration					

**Triad Data Available Upon Request** 



634



Airgas USA, LLC 630 United DrivePulp Dryer, #3 Paper Machine,
Purphare NC 077712 #2-3 SDTVs, & #1-2 CBs Durham, NC 27713 Airgas.com

# **CERTIFICATE OF ANALYSIS Grade of Product: EPA Protocol**

Part Number:

E02NI99E15A0678

CC416806 Cylinder Number:

Laboratory:

124 - Durham (SAP) - NC

**PGVP Number:** Gas Code:

H2S,BALN

B22021

Reference Number: 122-402048722-1

Cylinder Volume:

144.3 CF

Cylinder Pressure:

2015 PSIG

Valve Outlet:

330

Certification Date:

Mar 10, 2021

Expiration Date: Mar 10, 2024

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

			ANALYTIC	AL RESUI	TS		
HYDROGEN SULFIDE 7.000		Requested Concentration	Actual Concentration	Protocol Method	Total Relati Uncertainty		Assay Dates
		7.000 PPM Balance	7.257 PPM	G1	+/- 1.4% NIST Traceable		03/03/2021, 03/10/2021
			CALIBRATIO	N STAND	ARDS		
Туре	Lot ID	Cylinder No	Concentration			Uncertainty	Expiration Date
GMIS RGM The SRM	122401645168 12332 , PRM or RGM note	B101 CC163645 CC183693 d above is only in reference	10.10 PPM HYDR 10.07 PPM HYDR to the GMIS used in the as	OGEN SULFIDE	E/NITROGEN	+/- 0.80 +/- 0.8%	Jan 23, 2023 Dec 18, 2017
Instrun	nent/Make/Mod	lel	ANALYTICA Analytical P	-		: Multipoint Cal	libration
Annlied	Analytics OMA-40	06 AA210266	Ultraviolet		Mar	03, 2021	





# **PERMEATION DEVICE CERTIFICATES**



26295 Twelve Trees, Poulsbo, WA 98370, USA | tel: (360) 697-9199 | toll free: (877) 377-1887 | web: vicimetronics.com

The permeation rate of the DYNACAL\* PERMEATION DEVICE below is certified traceable to N.I.S.T standards.

Serial Number: T-51828

Certification Date: Jan 18, 2021 Certificate Expires: Jan 18, 2022

Chemical: Hydrogen Sulfide (7783-06-4)

Part Number: 147-543-0110-C50

Device Type: Dynacal Wafer Geometry: 40T3

Permeation Rate: 482.97 ng/min Temperature: 50 C

True Accuracy: +/- 1.53 % Max Allowed Accuracy: +/- 5.00 %

Certification Method: Gravimetric Order No: 132578

Customer: WESTON SOLUTIONS, INC.

Note: Empty weight 20.41 g.

Approved By:\_

### INDIVIDUAL DEVICE CERTIFICATION



26295 Twelve Trees, Poulsbo, WA 98370, USA | tel: (360) 697-9199 | toll free: (877) 377-1887 | web: vicimetronics.com

The permeation rate of the DYNACAL® PERMEATION DEVICE below is certified traceable to N.I.S.T standards.

Serial Number: 33-53274

Certification Date: Jan 18, 2021 Certificate Expires: Jan 18, 2022

Chemical: Methyl Mercaptan 74-93-1

Part Number: 187-040-6000-C50

Device Type: Dynacal Tube

Length: 4.00

Permeation Rate: 716.41 ng/min

Temperature: 50 C

True Accuracy: +/- 1.50 %

Max Allowed Accuracy: +/- 2.00 %

Certification Method: Gravimetric

Order No: 132578

Customer: WESTON SOLUTIONS, INC.

Note: Empty weight 10.9 g.

Approved By

## INDIVIDUAL DEVICE CERTIFICATION



26295 Twelve Trees, Poulsbo, WA 98370, USA | tel: (360) 697-9199 | toll free: (877) 377-1887 | web: vicimetronics.com

The permeation rate of the DYNACAL® PERMEATION DEVICE below is certified traceable to N.I.S.T standards.

Serial Number: 89-53332

Certification Date: Jan 26, 2021 Certificate Expires: Jan 26, 2022

Chemical: Dimethyl Sulfide 75-18-3 Part Number: 187-013-6200-89-C50

Device Type: Dynacal Tube Length: 1.30

Permeation Rate: 1197.35 ng/min Temperature: 50 C

True Accuracy: +/- 1.26 % Max Allowed Accuracy: +/- 2.00 %

Certification Method: Gravimetric Order No: 132578

Customer: WESTON SOLUTIONS, INC.

Note: Empty weight 15.0g

Approved By:\_

### INDIVIDUAL DEVICE CERTIFICATION



26295 Twelve Trees, Poulsbo, WA 98370, USA | tel: (360) 697-9199 | toll free: (877) 377-1887 | web: vicimetronics.com

The permeation rate of the DYNACAL\* PERMEATION DEVICE below is certified traceable to N.I.S.T standards.

Serial Number: 89-53266

Certification Date: Jan 18, 2021 Certificate Expires: Jan 18, 2022

Chemical: Dimethyl Disulfide 624-92-0

Part Number: 107-200-6301-C50S

Device Type: Dynacal Tube Length: 20.00

Permeation Rate: 917.53 ng/min Temperature: 50 C

True Accuracy: +/- 1.85 % Max Allowed Accuracy: +/- 2.00 %

Certification Method: Gravimetric Order No: 132578

Customer: WESTON SOLUTIONS, INC.

Note: Empty weight 15.5 g.

Approved By: The miles

## INDIVIDUAL DEVICE CERTIFICATION



26295 Twelve Trees, Poulsbo, WA 98370, USA | tel: (360) 697-9199 | toll free: (877) 377-1887 | web: vicimetronics.com

The permeation rate of the DYNACAL® PERMEATION DEVICE below is certified traceable to N.I.S.T standards.

Serial Number: T-51831

Certification Date: Jan 18, 2021

Certificate Expires: Jan 18, 2022

Chemical: Hydrogen Sulfide (7783-06-4)

Part Number: 147-543-0110-C50

Device Type: Dynacal Wafer

Geometry: 40T3

Permeation Rate: 642.30 ng/min

Temperature: 50 C

True Accuracy: +/- 4.23 %

Max Allowed Accuracy: +/- 5.00 %

Certification Method: Gravimetric

Order No: 132575

Customer: WESTON SOLUTIONS, INC.

Note: Empty weight 20.32 g. chemical life for continuous use expires

on 12/16/2021.

Approved By:



26295 Twelve Trees, Poulsbo, WA 98370, USA | tel: (360) 697-9199 | toll free: (877) 377-1887 | web: vicimetronics.com

The permeation rate of the DYNACAL® PERMEATION DEVICE below is certified traceable to N.I.S.T standards.

Serial Number: 33-50536

Certificate Expires: Jan 18, 2022 Certification Date: Jan 18, 2021

Chemical: Methyl Mercaptan 74-93-1

Part Number: 187-040-6000-C50

Device Type: Dynacal Tube

Length: 4.00

Permeation Rate: 900.58 ng/mln

Temperature: 50 C

True Accuracy: +/- 1.93 %

Max Allowed Accuracy: +/- 2.00 %

Certification Method: Gravimetric Customer: WESTON SOLUTIONS, INC.

Order No: 132575

Note: Empty weight 10.9 g.

Approved By:\_



26295 Twelve Trees, Poulsbo, WA 98370, USA | tel: (360) 697-9199 | toll free: (877) 377-1887 | web: vicimetronics.com

The permeation rate of the DYNACAL® PERMEATION DEVICE below is certified traceable to N.I.S.T standards.

Serial Number: 89-50725

Certificate Expires: Jan 18, 2022 Certification Date: Jan 18, 2021

Chemical: Dimethyl Sulfide 75-18-3 Part Number: 187-013-6200-89-C50

Length: 1.30 Device Type: Dynacal Tube

Temperature: 50 C Permeation Rate: 758.14 ng/min

Max Allowed Accuracy: +/- 2.00 % True Accuracy: +/- 1.42 %

Order No: 132575 Certification Method: Gravimetric

Customer: WESTON SOLUTIONS, INC.

Note: Empty weight 15.0 g.

Approved By:\_

INDIVIDUAL DEVICE CERTIFICATION



26295 Twelve Trees, Poulsbo, WA 98370, USA | tel: (360) 697-9199 | toll free: (877) 377-1887 | web: vicimetronics.com

The permeetion rate of the DYNACAL® PERMEATION DEVICE below is certified traceable to N.i.S.T standards.

Serial Number: 89-53405

Certificate Expires: Jan 18, 2022 Certification Date: Jan 18, 2021

Chemical: Dimethyl Disulfide 624-92-0

Part Number: PD-6301-C50

Device Type: Dynacal Tube

Length: 20.00

Permeation Rate: 895.19 ng/mln

Temperature: 50 C

True Accuracy: +/- 1.44 %

Max Allowed Accuracy: +/- 2.00 %

Certification Method: Gravimetric

Order No: 132575

Customer: WESTON SOLUTIONS, INC.

Note: Empty weight 15.5 g.

Approved By:



# **CYCLONIC FLOW CHECKS**





# PULP DRYER

# **Determination of Stack Gas Velocity - Method 2**

	Client	Nev	New Indy		e Pulp Dryer		Pitot Coe	eff (C <sub>p</sub> )	0.84
	Location/Plant	Catav	/ba, SC	W.O. Numbe	er 15730.001.008		Stack Area (	A <sub>s</sub> ), ft <sup>2</sup>	1.63
	Operator	ATZ		Dat	e 6/26.	/21			14010
			Run Number	prelly	n cycland				
			Time	11:5	5	N. C.			
		Barometric Pre	ess (P <sub>bar</sub> ), in Hg*						
		Static P	ress (P <sub>g</sub> ), in H <sub>2</sub> 0						
		Source M	oisture (B <sub>ws</sub> ), %						
	O <sub>2</sub> , %								
			CO <sub>2</sub> , %					735 1205.00	
	nic Flow mination	Traverse	Location		peck good ?		eck good ?	Leak Check good ?	
Δp at 0°	Angle yielding $\Delta p = 0$	Port	Point	Δp, in H <sub>2</sub> O	Source Temperature (T <sub>s</sub> ), °F	Δp, in H <sub>2</sub> O	Source Temperature (T <sub>s</sub> ), °F	Δp, in H <sub>2</sub> O	Source Temperature
0	APSO	Α	1	20	(15/1	111120	(1s), F	111120	(T <sub>s</sub> ), °F
.62	5	The state of	2						
,62	5		3						
102	3		4						
, 03	5		5						
.05	10		6						
.08	20		7						
.08	26		8						
0	0	В	1			V HILLOW			
6	G		2						
,63	3		3						
103	3		4						
104	5		5						
.05	10		6						
107	13		7						
104	15		8		St. Machine				
Avg Angle	9.83		Avg ∆p & Temp						
			Avg √∆p					N. Marie	
			velocity, ft/sec.						
			iditions, acf/min				1	100	
			litions, dscf/min						
$M_s = T_{s(abs)} = P_s = V_s = Q_{act} =$	Md x (1 - B <sub>ws</sub> / 1	000) + 18 x B <sub>ws</sub> p <sub>avq</sub> x √(T <sub>s(abs)</sub> /	$(P_s \times M_s))$	O <sub>2</sub> + %CO <sub>2</sub> ))		$M_s$ = Wet mole $T_{s(abs)}$ = Source $P_s$ = Absolute : $V_s$ = Average : $Q_{act}$ = Volumet	cular weight source cular weight source Temperature, abstack static pressuas stream vel ucity inc flow rate of dry	ce gas, lb/lb-mol solute(°R) ire, inches Hg. y, ft/sec. t stack gas at ac	etual, wacf/min

conditions,

\*Barometric Pressure is at port elevation

Comments





# **No. 3 Paper Machine**

	Client	Nev	w Indy	Source	No. 1 Hoo	Cod Exhaust Pitot Coeff (Cp) 0.84			
	Location/Plant	Catav	vba, SC		r 15730.001.008		Stack Area (/	A <sub>s</sub> ), ft <sup>2</sup>	13.64
	Operator	VD/L	F	Date	6/15/	2)			47/M-1
		/	Run Number	Pre	Lim				
			Time	122					
		Barometric Pr	ess (P <sub>bar</sub> ), in Hg*						
		Static F	Press (Pg), in H <sub>2</sub> 0						
		Source N	loisture (B <sub>WS</sub> ), %						
			O <sub>2</sub> , %						
			CO <sub>2</sub> , %						
Cyclo	nic Flow mination	Traverse	Location		eck good ?		eck good ?		eck good ?
∆p at 0°	Angle yielding Δp = 0	Port	Point	Δp, in H₂O	Source Temperature (T <sub>s</sub> ), °F	Δp, in H₂O	Source Temperature (T <sub>s</sub> ), °F	Δp, in H <sub>2</sub> O	Source Temperature (T <sub>s</sub> ), °F
.70	רן	Α	1						
.50	14		2						
.60	10		3						
.26	7		4						
.66	15		5						
.58	22		6						
.26	20		7						
.18	37		8						
.90	23	В	13						
.78	21		2						
.50	16		3						
.18	5		4						
.44	15		5						
.38	11		6						
.10	5		7						
.06	5		8						
Avg Angle	15.2		Avg ∆p & Temp						
		H-VIII.	Avg √∆p						
			n velocity, ft/sec.						
			inditions, acf/min						11 11 11
			ditions, dscf/min						
M <sub>d</sub> =	0.32 x %O <sub>2</sub> + 0 Md x (1 - B <sub>ws</sub> /	100) + 18 x B <sub>w</sub>	0.28 x (100% - (% s / 100	O <sub>2</sub> + %CO <sub>2</sub> ))		where: M <sub>d</sub> = Dry mole	cular weight source	ce gas, lb/lb-mo	le.

 $T_{s(abs)} = T_s + 460$ 

 $P_s = P_{bar} + P_g / 13.6$ 

 $V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$ 

Q<sub>act</sub> = 60 x V<sub>s</sub> x A<sub>s</sub>

 $Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$ 

\*Barometric Pressure is at port elevation

M<sub>s</sub> = Wet molecular weight source gas, lb/lb-mole.

T<sub>s(abs)</sub> = Source Temperature, absolute(°R)

P<sub>s</sub> = Absolute stack static pressure, inches Hg.

V<sub>s</sub> = Average gas stream velocity, ft/sec.

Q<sub>act</sub> = Volumetric flow rate of wet stack gas at actual, wacf/min

Q<sub>sd</sub> = Volumetric flow rate of dry stack gas at standard conditions,



Client New Indy			Source	No. 2 f	1000 2X	Pitot Coe	eff (C <sub>p</sub> )	0.84		
	Location/Plant	Cataw	ba, SC	W.O. Number	15730.001.008		Stack Area (	A <sub>s</sub> ), ft <sup>2</sup>	7.03	
	Operator	100/	F	Date	6/15/2	21	Pitot/Ther	mo ID <u>P14</u>	17/M1	
			Run Number	Pre	lim					
			Time	115						
		Barometric Pre	ess (P <sub>bar</sub> ), in Hg*							
		Static P	ress (P <sub>g</sub> ), in H <sub>2</sub> 0							
		Source M	oisture (B <sub>WS</sub> ), %							
			O <sub>2</sub> , %							
			CO <sub>2</sub> , %							
	ic Flow nination	Traverse	Location	Leak Check good ?			eck good ?		eck good ?	
∆p at	Angle yielding			Δр,	Source Temperature	Δр,	Source Temperature	Δр,	Source Temperature	
.72	Δp = 0	Port A	Point 1	in H <sub>2</sub> O	(T <sub>s</sub> ), °F	in H₂O	(T <sub>s</sub> ), °F	in H <sub>2</sub> O	(T <sub>s</sub> ), °F	
.78	13		2							
192	13		3							
.96	16		4							
,40	10		5							
92	25		6							
.46	17		7							
.60	20		8							
1.1	25	В	1							
1.1	22		2							
(_1	15		3							
.59	8		4							
.62	10		5							
. 24	10		6							
.12	5		7							
.04	2		8							
Avg Angle	Avg Angle 14 Avg Δp & Temp						1 y 1- 3			
			Avg √∆p			4-4				
		erage gas stream							War Land	
	Vol. flow	rate at actual co	nditions, acf/min					Tanjari i		
	Vol. flow rate	at standard con-	ditions, dscf/min							
$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$ where:										

 $M_s = Md \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$ 

 $T_{s(abs)} = T_s + 460$ 

Comments

 $P_s = P_{bar} + P_g / 13.6$ 

 $V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$ 

Q<sub>act</sub> = 60 x V<sub>s</sub> x A<sub>s</sub>

 $Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$ 

\*Barometric Pressure is at port elevation

M<sub>d</sub> = Dry molecular weight source gas, lb/lb-mole.

M<sub>s</sub> = Wet molecular weight source gas, lb/lb-mole.

T<sub>s(abs)</sub> = Source Temperature, absolute(°R)

P<sub>s</sub> = Absolute stack static pressure, inches Hg.

V<sub>s</sub> = Average gas stream velocity, ft/sec.

Q<sub>act</sub> = Volumetric flow rate of wet stack gas at actual, wacf/min Q<sub>sd</sub> = Volumetric flow rate of dry stack gas at standard

conditions,



	Client	New	/ Indy	Source	No. 3 He	of Fishai	# Pitot Coeff	f (C <sub>p</sub> )	0.84
	Location/Plant	Cataw	rba, SC	W.O. Number	15730.001.008		Stack Area (A	s), ft <sup>2</sup> 17	.03
	Operator	VD/	LF	Date	6/15/2	1	Pitot/Therm	10 ID P14	7/m-1
			Run Number	Prel	-				
			Time	110					
		Barometric Pre	ess (P <sub>bar</sub> ), in Hg*						
		Static P	ress (P <sub>g</sub> ), in H <sub>2</sub> 0						
		Source M	oisture (B <sub>ws</sub> ), %						
			O <sub>2</sub> , %						
			CO <sub>2</sub> , %						
	ic Flow ination	Traverse	Location	Leak Che	ck good ?		eck good ?		eck good ?
Δp at	Angle yielding	Dort	Doint	Δp,	Source Temperature	Δр,	Source Temperature	Δр,	Source Temperature
.64	Δp = 0	Port	Point 1	in H <sub>2</sub> O	(T <sub>s</sub> ), °F	in H <sub>2</sub> O	(T <sub>s</sub> ), °F	in H <sub>2</sub> O	(T <sub>s</sub> ), °F
.62	8		2						
.60	8		3						
.72	12		4						
.32	10		5						
.96	26		6						
.98	26		7						
.70	28		8						
.76	12	В	1						
.66	10		2						
.56	7		3				5000000		
40	5		4						
.96	9	6/5/21	5						
1.1		615121	6						
,86	24		7		2.429				
.59	25		8						
Avg Angle	15.3		Avg ∆p & Temp						
			Avg √∆p					-	
Average gas stream velocity, ft/sec.  Vol. flow rate at actual conditions, acf/min									
			ditions, dscf/min						
$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$ where: $M_s = Md \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$ where: $M_d = Dry$ molecular weight source gas, lb/lb-mole. $M_s = Wet$ molecular weight source gas, lb/lb-mole.									

 $P_s = P_{bar} + P_g / 13.6$ 

 $V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$ 

Comments

Q<sub>act</sub> = 60 x V<sub>s</sub> x A<sub>s</sub> Q<sub>sd</sub> = Q<sub>act</sub> x 17.64 x (1 - B<sub>ws</sub> / 100) x P<sub>s</sub> / T<sub>s(abs)</sub>

\*Barometric Pressure is at port elevation

$$\begin{split} &T_{\text{s(abs)}} = \text{Source Temperature, absolute(}^{\text{o}}\text{R}) \\ &P_{\text{s}} = \text{Absolute stack static pressure, inches Hg.} \\ &V_{\text{s}} = \text{Average gas stream velocity, ft/sec.} \end{split}$$

Q<sub>act</sub> = Volumetric flow rate of wet stack gas at actual, wacf/min

Q<sub>sd</sub> = Volumetric flow rate of dry stack gas at standard conditions,



	Client	New	/ Indy	Source	No.4 Ho	od Exhau	Pitot Coe	ff (C <sub>p</sub> )	0.84		
			vba, SC		15730.001.008		Stack Area (A	A <sub>s</sub> ), ft <sup>2</sup>	7.18		
	Operator	VD/2	F	Date	6/15/0	2-1	Pitot/Theri	mo ID P147/M-1			
		100	Run Number	Prel:	m						
			Time	1841							
		Barometric Pre	ess (P <sub>bar</sub> ), in Hg*								
		Static P	ress (P <sub>g</sub> ), in H <sub>2</sub> 0								
		Source M	oisture (B <sub>WS</sub> ), %								
			O <sub>2</sub> , %								
			CO <sub>2</sub> , %								
	ic Flow ination	Traverse	Location	Leak Check good ?			eck good ?		eck good ?		
∆p at 0°	Angle yielding ∆p = 0	Port	Point	Δp, in H <sub>2</sub> O	Source Temperature (T <sub>s</sub> ), °F	Δp, in H <sub>2</sub> O	Source Temperature (T <sub>s</sub> ), °F	Δp, in H <sub>2</sub> O	Source Temperature (T <sub>s</sub> ), °F		
.38	15	A	1	111120	(1 <sub>s</sub> ), F	111120	(1 <sub>s</sub> ), F	111120	(1 <sub>s</sub> ), F		
. 52	17		2								
.20	15		3				5-17-17				
.08	7		4								
.22	12		5								
28	17		6								
.16	13		7								
.12	14		8								
.00	27	В	1								
.40	25		2	7							
.40	20		3								
-20	3		4								
.40	16		5								
.22	13		6								
-02	8		7								
.02	8		8								
Avg Angle	14.4		Avg ∆p & Temp								
			Avg √∆p								
			n velocity, ft/sec.								
			nditions, acf/min								
	Vol. flow rate	at standard con	iditions, dscf/min								
	$M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$ where: $M_e = Md \times (1 - B_{we} / 100) + 18 \times B_{we} / 100$ where: $M_d = Dry \text{ molecular weight source gas. lb/lb-mole.}$										

 $T_{s(abs)} = T_s + 460$  $P_s = P_{bar} + P_g / 13.6$ 

 $V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$ Q<sub>act</sub> = 60 x V<sub>s</sub> x A<sub>s</sub>

 $Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$ 

\*Barometric Pressure is at port elevation

M<sub>s</sub> = Wet molecular weight source gas, lb/lb-mole.

 $T_{s(abs)}$  = Source Temperature, absolute(°R)  $P_s$  = Absolute stack static pressure, inches Hg.  $V_s$  = Average gas stream velocity, ft/sec.

Q<sub>act</sub> = Volumetric flow rate of wet stack gas at actual, wacf/min

Q<sub>sd</sub> = Volumetric flow rate of dry stack gas at standard conditions,



	Client	Nev	v Indy	Source	No. 6 Ho	od Exha	Pitot Coef	f (C <sub>p</sub> )	0.84
ı	Location/Plant	Catav	vba, SC	W.O. Number	15730.001.008		Stack Area (A	s), ft <sup>2</sup> [4	1.75
	Operator	VD/	LF	Date	6/15	21	Pitot/Thern	no ID <u>P14</u>	7/M-1
			Run Number	Prel	in				
			Time	101	4				
		Barometric Pr	ess (P <sub>bar</sub> ), in Hg*						
		Static F	Press (Pg), in H <sub>2</sub> 0						
		Source M	loisture (B <sub>ws</sub> ), %						
			O <sub>2</sub> , %						
			CO <sub>2</sub> , %						
	ic Flow	Traverse	e Location	Leak Che	eck good ?		eck good ?		eck good ?
Δp at 0°	Angle yielding $\Delta p = 0$	Port	Point	Δp, in H <sub>2</sub> O	Source Temperature (T <sub>s</sub> ), °F	Δp, in H <sub>2</sub> O	Source Temperature (T <sub>s</sub> ), °F	Δp, in H <sub>2</sub> O	Source Temperature (T <sub>s</sub> ), °F
1.2	34	A	1	117120	(18/)	1171120	(18/,		(18/)
1.8	34		2						
1.2	28		3						
.30	10	Marie 1	4						
.66	9	Vini ex	5						
.50	10		6						
.10	8		7						
.10	8		8						
1.1	21	В	1						
1.1	18		2						
1.0	18		3						
.80	10		4						
.74	10		5						
.46	15		6						
.14	8		7						
.12	8		8						
Avg Angle	15.6		Avg ∆p & Temp						104.14.5
			Avg √∆p	KE DUE YE					
	Ave	erage gas strea	m velocity, ft/sec.						
			onditions, acf/min						
	Vol. flow rate	at standard co	nditions, dscf/min						
M <sub>s</sub> = T <sub>s(abs)</sub> =		/ 100) + 18 x B,	0.28 x (100% - (% <sub>vs</sub> / 100	O <sub>2</sub> + %CO <sub>2</sub> ))		M <sub>s</sub> = Wet mol	ecular weight source	ce gas, lb/lb-mo	

 $V_s$  = 85.49 x  $C_p$  x  $\sqrt{\Delta p_{avg}}$  x  $\sqrt{(T_{s(abs)} / (P_s \times M_s))}$   $Q_{act}$  = 60 x  $V_s$  x  $A_s$ 

Comments

 $Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$ 

\*Barometric Pressure is at port elevation

P<sub>s</sub> = Absolute stack static pressure, inches Hg.

 $m V_s$  = Average gas stream velocity, ft/sec.  $m Q_{act}$  = Volumetric flow rate of wet stack gas at actual, wacf/min Q<sub>sd</sub> = Volumetric flow rate of dry stack gas at standard

conditions,



Client New Indy			Source	No.7 +	load Exha	Pitot Coel	ff (C <sub>p</sub> )	0.84							
L	.ocation/Plant	Cataw	ba, SC	W.O. Number	15730.001.008		Stack Area (A	A <sub>s</sub> ), ft <sup>2</sup> 23	3.76						
	Operator	VD/LF		Date	6/15/	21	Pitot/Therr	mo ID PI4	1/1-1						
			Run Number	Prel:	m										
			Time	1001											
		Barometric Pre	ess (P <sub>bar</sub> ), in Hg*												
		Static P	ress (P <sub>g</sub> ), in H <sub>2</sub> 0												
		Source M	oisture (B <sub>ws</sub> ), %												
			O <sub>2</sub> , %												
			CO <sub>2</sub> , %												
Cyclon	ic Flow ination	Traverse	Location	Leak Check good ?			eck good ?		eck good ?						
Δp at	Angle yielding $\Delta p = 0$	Port	Point	Δp, in H <sub>2</sub> O	Source Temperature (T <sub>s</sub> ), °F	Δp, in H <sub>2</sub> O	Source Temperature (T <sub>s</sub> ), °F	Δp, in H <sub>2</sub> O	Source Temperature (T <sub>s</sub> ), °F						
.90	15	А	1												
.4%	14		2												
.78	12		3												
.64	12		4												
50	10		5												
.50	13		6												
.12	10		7												
0	0		8												
.68	14	В	1												
1.0	18		2												
.92	18		3												
.68	10		4												
्रथभ	10		5												
.22	5		6												
.14	6		7												
0	0		8	E.Z.: 25.65%											
Avg Angle	Avg Angle O.6 Avg Δp & Tem				1 3 1 1 2		Parket 10								
			Avg √∆p	Z ZZV		4									
			m velocity, ft/sec.												
			onditions, acf/min			<u> </u>									
	Vol. flow rate	e at standard cor	nditions, dscf/min												
M <sub>s</sub> =	Md x (1 - Bws			(O <sub>2</sub> + %CO <sub>2</sub> ))			$ \begin{aligned} \mathbf{M_d} &= 0.32 \times \% O_2 + 0.44 \times \% C O_2 + 0.28 \times (100\% - (\% O_2 + \% C O_2)) \\ \mathbf{M_s} &= \mathbf{Md} \times (1 - \mathbf{B_{ws}} / 100) + 18 \times \mathbf{B_{ws}} / 100 \end{aligned} \qquad \begin{aligned} \mathbf{M_d} &= \mathbf{Dry} \text{ molecular weight source gas, lb/lb-mole.} \\ \mathbf{T_{s(abs)}} &= \mathbf{T_s} + 460 \end{aligned} \qquad \\ \mathbf{M_s} &= \mathbf{Wet} \text{ molecular weight source gas, lb/lb-mole.} \end{aligned}$								

 $P_s = P_{bar} + P_g / 13.6$ 

 $V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$ 

Comments

Q<sub>act</sub> = 60 x V<sub>s</sub> x A<sub>s</sub> Q<sub>sd</sub> = Q<sub>act</sub> x 17.64 x (1 - B<sub>ws</sub> / 100) x P<sub>s</sub> / T<sub>s(abs)</sub>

\*Barometric Pressure is at port elevation

T<sub>s(abs)</sub> = Source Temperature, absolute(°R)

P<sub>s</sub> = Absolute stack static pressure, inches Hg.

 $V_{\rm s}$  = Average gas stream velocity, ft/sec.  $Q_{\rm act}$  = Volumetric flow rate of wet stack gas at actual, wacf/min  $Q_{\rm sd}$  = Volumetric flow rate of dry stack gas at standard

conditions,



Client New Indy				Source	No. 8 1	Tood Ex	Pitot Coe	eff (C <sub>p</sub> )	0.84
	Location/Plant	Catav	/ba, SC	W.O. Number	15730.001.008		Stack Area (	A <sub>s</sub> ), ft <sup>2</sup> 2	3.76
	Operator	10/2	F	Date	6/15/ in	21	Pitot/The	mo ID P14	7/M-1
			Run Number	Prel	in.				
			Time	94	5				
		Barometric Pre	ess (P <sub>bar</sub> ), in Hg*						
		Static P	ress (P <sub>g</sub> ), in H <sub>2</sub> 0						
		Source M	oisture (B <sub>ws</sub> ), %						
			O <sub>2</sub> , %						
			CO <sub>2</sub> , %	AND ELLING EXCURSORY EXTANGED IN					
	nic Flow nination	Traverse	Location	Leak Check good ?		Leak Check good ?		Leak Check good ?	
∆p at	Angle yielding			Δр,	Source Temperature	Δρ,	Source Temperature	Δр,	Source Temperature
0°	$\Delta p = 0$	Port	Point	in H <sub>2</sub> O	(T <sub>s</sub> ), °F	in H <sub>2</sub> O	(T <sub>s</sub> ), °F	in H <sub>2</sub> O	(T <sub>s</sub> ), °F
1.1	15	A	1						
1.1	15		3						
1.1	Elizabeth and the second		4					1 m 2 m 2 m 2 m 2 m 2 m 2 m 2 m 2 m 2 m	
.88	14		5						
.50	9		6						
.16	10		7						
.14	ID		8						
.86	13	В	1						
1.1	18		2						
.96	20		3			23.			
.96	11		4						
.30	7		5						
.24	7		6						
.16	3		7						
.10	5		8						
Avg Angle	Avg Angle 11.3 Avg Δp & Temp								
			Avg √∆p						
	Ave	erage gas stream	velocity, ft/sec.	20					
		rate at actual cor							
	Vol. flow rate	at standard cond	ditions, dscf/min						
M <sub>s</sub> = T <sub>s(abs)</sub> =	0.32 x %O <sub>2</sub> + 0 Md x (1 - B <sub>ws</sub> / T <sub>s</sub> + 460 P <sub>bar</sub> + P <sub>a</sub> / 13.6	100) + 18 x B <sub>ws</sub>	.28 x (100% - (%0 / 100	O <sub>2</sub> + %CO <sub>2</sub> ))		M <sub>s</sub> = Wet mole	cular weight source	ce gas, lb/lb-mol	

 $\begin{aligned} &V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avq}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))} \\ &Q_{act} = 60 \times V_s \times A_s \end{aligned}$ 

Comments

 $Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$ 

\*Barometric Pressure is at port elevation

 $T_{\text{s(abs)}}$  = Source Temperature, absolute( ${}^{\circ}$ R)  $P_{\text{s}}$  = Absolute stack static pressure, inches Hg.  $V_{\text{s}}$  = Average gas stream velocity, ft/sec.

 $Q_{act}$  = Volumetric flow rate of wet stack gas at actual, wacf/min  $Q_{sd}$  = Volumetric flow rate of dry stack gas at standard conditions,

Integrated Air Services

Client New Indy		Indy	Source	o. 1 Hood Exhau	haust Pitot Coeff (C <sub>p</sub> ) 0.84				
ı	ocation/Plant	Cataw	ba, SC	W.O. Number	15730.001.008		Stack Area (A	A <sub>s</sub> ), ft <sup>2</sup>	13.64
	Operator	BEALI	BE	Date	6/25/2	1	Pitot/Ther	mo ID	'77
			Run Number		n				
			Time		-7:45	y neading.			
		Barometric Pre	ess (P <sub>bar</sub> ), in Hg*	29.1					
		Static P	ress (P <sub>g</sub> ), in H <sub>2</sub> 0	6					
		Source M	oisture (B <sub>WS</sub> ), %	~20				Water The Control of	
			O <sub>2</sub> , %	~20 Zo.5		E			
		CO <sub>2</sub> , %		8					
	ic Flow nination	Traverse Location		Leak Check good ?			eck good ?	Leak Check good ?	
∆p at 0°	Angle yielding \Delta p = 0	Port	Point	Δp, in H <sub>2</sub> O	Source Temperature (T <sub>s</sub> ), °F	Δp, in H₂O	Source Temperature (T <sub>s</sub> ), °F	Δp, in H₂O	Source Temperature (T <sub>s</sub> ), °F
,40	11	А	1		173				
,26	13		2		173				
,19	6		3		174			Name and	
,14	5		4		173				
.17	15		5		174			a	
07	4		6		174				
02	4		7		173				
01	2		8		169				
,70	18	В	1		171				
58	14		2		174				
,41	14		3		174				
,15	11		4		14				
.03	16		5		10//				
.03	19		6		1774				
16.	6		7		175				
03	2		8		168	25/5/85/5/4			
Avg Angle			Avg ∆p & Temp					W	11 11
			Avg √∆p				1		
			m velocity, ft/sec.						
			onditions, acf/min						
	Vol. flow rate	e at standard cor	nditions, dscf/min						
		0.44 x %CO <sub>2</sub> +	0.28 x (100% - (%	%O <sub>2</sub> + %CO <sub>2</sub> ))		where:	ecular weight sou	rce gas, lb/lb-me	ole.

 $M_s = Md \times (1 - B)$  $T_{s(abs)} = T_s + 460$  $P_{a} = P_{bar} + P_{g} / 13.6$ 

 $V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$  $Q_{act} = 60 \times V_s \times A_s$  $Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$ 

\*Barometric Pressure is at port elevation

M<sub>s</sub> = Wet molecular weight source gas, lb/lb-mole.

T<sub>s(abs)</sub> = Source Temperature, absolute(°R)

P<sub>s</sub> = Absolute stack static pressure, inches Hg.

 $V_s$  = Average gas stream velocity, ft/sec.  $Q_{act}$  = Volumetric flow rate of wet stack gas at actual, wacf/min

Q<sub>sd</sub> = Volumetric flow rate of dry stack gas at standard conditions,



Comments

Client	New Indy	Source of Hood Exhau	S† Pitot Coeff (	(C <sub>p</sub> ) 0.84
Location/Plant	Catawba, SC	W.O. Number 15730.001.008	Stack Are a (A <sub>s</sub> )	
Operator	BEA/RE	Date 6/24/2	Pitot/Thermo	ID P77
	Run Number	Palin		
	Time  Barometric Press (P <sub>bar</sub> ), in Hg*	Palim 18:30-18:50 29:58		
	Static Press (P <sub>g</sub> ), in H <sub>2</sub> 0	29.58		
	Source Moisture (Bws), %			
	O <sub>2</sub> , %			
	CO <sub>2</sub> , %			

Cyclo	Cyclonic Flow		Traverse Location		Leak Check good ?				
Deter	mination	Iraverse	Location	Leak Che	N Seck good ?		eck good ?		eck good ?
Δp at	Angle yielding Ap = 0	Port	Point	Δp, in H <sub>2</sub> O	Source Temperature (T <sub>s</sub> ), °F	Δp, in H <sub>2</sub> O	Source Temperatur	Δр,	Source Temperature
.55	6	A	11		186	111 H <sub>2</sub> O	(T <sub>s</sub> ), °F	in H <sub>2</sub> O	(T <sub>s</sub> ), °F
.60	.5		2		186				
. 35	3		3		185				
.57	8		4		180				
.30	4	16,12 111	5		180			V.	
185	16	ny Trans	6		176				
88	26		7		173				
.77	26	No.	8		180				
.74	14	В	1						
.52	8		2		188				
Sil	8		3		181				
. 28	4		4		181				
-28	4		5		183				
.83	20		6		183				
.92	24	E 112 A 11 A	7		184				
.90	28		8		182				
Avg Angle		A	vg ∆p & Temp		10-				
	94						4		
	Average gas stream velocity, ft/sec.								
	Vol. flow rate at actual conditions, acf/min								
									Yn Harle
	Vol. flow rate at standard conditions, dscf/min								

 $M_d = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (100\% - (\%O_2 + \%CO_2))$  $M_s = Md \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$ 

 $T_{s(abs)} = T_s + 460$ 

 $P_s = P_{bar} + P_g / 13.6$ 

 $V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$ 

Q<sub>act</sub> = 60 x V<sub>s</sub> x A<sub>s</sub>

Comments

 $Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$ 

\*Barometric Pressure is at port elevation

M<sub>d</sub> = Dry molecular weight source gas, lb/lb-mole.

M<sub>s</sub> = Wet molecular weight source gas, lb/lb-mole

T<sub>s(abs)</sub> = Source Temperature, absolute(°R)

P<sub>s</sub> = Absolute stack static pressure, inches Hg.

V<sub>s</sub> = Average gas stream velocity, ft/sec.

where:

Q<sub>act</sub> = Volumetric flow rate of wet stack gas at actual, wacf/min Q<sub>sd</sub> = Volumetric flow rate of dry stack gas at standard

conditions,



	Client	Nev	v Indy	Source	o. 3 Hood Exhau		Pitot Coe	eff (C <sub>p</sub> )	0.84
	Location/Plant	Cataw	vba, SC		15730.001.008		Stack Area (	A <sub>s</sub> ), ft <sup>2</sup>	
	Operator	BEn/B	E	Date	6/25/2	51	Pitot/T ·er	mo ID 7	77)
			Run Number	Pret	;~			HOUSE !	
			Time	7:45	-7:55				
			ess (P <sub>bar</sub> ), in Hg*	29.	68				
			ress (P <sub>g</sub> ), in H <sub>2</sub> 0						
		Source M	oisture (B <sub>WS</sub> ), %						
			O <sub>2</sub> , %					1 2	
			CO <sub>2</sub> , %						
	nic Flow mination	Traverse	Location	Leak Che	ck good ?		eck good ?		eck good ?
∆p at	Angle yielding			Δр,	Source Temperature	Δр,	Source Temperature	Δр,	Source Temperature
0°	Δp = 0	Port A	Point 1	in H₂O	(T <sub>s</sub> ), °F	in H <sub>2</sub> O	(T <sub>s</sub> ), °F	in H₂O	(T <sub>s</sub> ), °F
10	28	^	2		150				
1.3	30		3		191				
-59	25		4		151				Contract to
.70	12		5	03	191				
,53	8		6		192				
,47	7		7		193				
,05	5		8		191				
1.1	20	В	1						
.56	15		2		188				
169	8		3		190				
53	13		4		191		I and a second		
.50	14		5		197				
.12	6		6		1000				
. 18	7		7		191				
.10	5		8		190		WILES		
Avg Angle			Avg ∆p & Temp		The same				
			Avg √∆p						
	Avei	rage gas stream	velocity, ft/sec.						
	Vol. flow ra	ate at actual cor	ditions, acf/min						
	Vo! flow rate a	at standard cond	litions, dscf/min						
$M_{s} = T_{s(abs)} = P_{s} =$	$0.32 \times \%O_2 + 0.000 \times (1 - B_{ws})^2$ $T_s + 460$ $P_{bar} + P_g / 13.6$ $85.49 \times C_p \times \sqrt{\Delta}$	100) + 18 x B <sub>ws</sub>		O <sub>2</sub> + %CO <sub>2</sub> ))		$M_s$ = Wet mole $T_{s(abs)}$ = Source $P_s$ = Absolute	cular weight source cular weight source Temperature, ab stack static pressu gas stream velocit	ce gas, lb/lb-mo solute(°R) ire, inches Hg.	

 $Q_{act} = 60 \text{ x } V_s \text{ x } A_s$  $Q_{sd} = Q_{act} \text{ x } 17.64 \text{ x } (1 - B_{ws} / 100) \text{ x } P_s / T_{s(abs)}$ 

\*Barometric Pressure is at port elevation

 ${
m Q}_{
m act}$  = Volumetric flow rate of wet stack gas at actual, wacf/min  ${
m Q}_{
m sd}$  = Volumetric flow rate of dry stack gas at standard

conditions,



Comments \_\_\_

	Client New Indy		Source	o. 4 Hood Exhau	ist	Pitot Coeff (C <sub>p</sub> ) 0.84			
	Location/Plant	Cataw	vba, SC	W.O. Number	15730.001.008		Stack Area (	A <sub>s</sub> ), ft <sup>2</sup>	7.18
	Operator	BEA/E	<b>Æ</b>	Date	6/25/	21		rmo ID P	
			Run Number	Prel	:				
			Time	11:05	-11:20				
		Barometric Pre	ess (P <sub>bar</sub> ), in Hg*	29.0	-11:20				
		Static P	ress (P <sub>g</sub> ), in H <sub>2</sub> 0	-,49					
		Source M	loisture (B <sub>WS</sub> ), %	~20			EAST LINE		
			O <sub>2</sub> , %						
			CO <sub>2</sub> , %	B				5-1 2 70	
	nic Flow nination	Traverse	Location	Leak Check good ?			eck good ?	Leak Check good ?	
∆p at 0°	Angle yietding ∆p = 0	Port	Point	Δp, in H <sub>2</sub> O	Source Temperature (T <sub>s</sub> ), °F	Δp, in H₂O	Source Temperature (T <sub>s</sub> ), °F	Δp, in H₂O	Source Temperature (T <sub>s</sub> ), °F
.32	14	А	1		192				
,33	16		2		193				
,19	13		3		192				
,08	6		4		192				
,23	12		5		193				Maria Victoria
,29	17		6		192				
,12	9		7		191		Market Bridge	( The strong	
.07	4		8		190				
151	23	В	1		KO				
,45	20		2		192		A Maria		
147	22		3		193				
,14	il		4		193				
123	12		5		154		7		
,20	10		6		192				
.02	6		7		191				
108	10		8		189				
Avg Angle			Avg ∆p & Temp						
			Avg √∆p						
			n velocity, ft/sec.						
			nditions, acf/min						
	Vol. flow rate	at standard con-	ditions, dscf/min						
M <sub>s</sub> =	0.32 x %O <sub>2</sub> + 0 Md x (1 - B <sub>ws</sub> / T <sub>s</sub> + 460	.44 x %CO <sub>2</sub> + 0 100) + 18 x B <sub>ws</sub>	).28 x (100% - (%) <sub>s</sub> / 100	O <sub>2</sub> + %CO <sub>2</sub> ))			cular weight sour		

 $P_s = P_{bar} + P_g / 13.6$ 

 $V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$ 

Comments

Q<sub>act</sub> = 60 x V<sub>s</sub> x A<sub>s</sub> Q<sub>sd</sub> = Q<sub>act</sub> x 17.64 x (1 - B<sub>ws</sub> / 100) x P<sub>s</sub> / T<sub>s(abs)</sub>

\*Barometric Pressure is at port elevation

T<sub>s(abs)</sub> = Source Temperature, absolute(°R)

P<sub>s</sub> = Absolute stack static pressure, inches Hg.

V<sub>s</sub> = Average gas stream velocity, ft/sec.

Q<sub>act</sub> = Volumetric flow rate of wet stack gas at actual, wacf/min Q<sub>sd</sub> = Volumetric flow rate of dry stack gas at standard conditions,



Client		New	New Indy		#6 PM			eff (C <sub>p</sub> ) 0.84	
L		Catawl			15730.0	001.008 Stack Area (A		h <sub>s</sub> ), ft <sup>2</sup> 14.73	
		В		Date	6/25/	2021	Pitot/Thern	mo ID <u>27)</u>	
			Run Number		K-				
			Time	1930					
		Barometric Pres	ss (P <sub>bar</sub> ), in Hg*	29.6					
		Static Pro	ess (P <sub>g</sub> ), in H <sub>2</sub> 0	7					
		Source Mo	oisture (B <sub>ws</sub> ), %	-15					
			O <sub>2</sub> , %	20.					
			CO <sub>2</sub> , %	8					
Cyclon Determ		Traverse	Location	Leak Che			ck good ?		eck good ?
Determ	Angle				Source		Source		Source
∆p at 0°	yielding Δp = 0	Port	Point	∆p, in H <sub>2</sub> O	Temperature (T <sub>s</sub> ), °F	$\Delta p_1$ in $H_2O$	Temperature (T <sub>s</sub> ), °F	Δp, in H <sub>2</sub> O	Temperature (T <sub>s</sub> ), °F
1.0	28	A	)		(				
1.5	32		2						
1.1	29		3						
38	12		4						
,70	13		3			*			
,43	8		6						
,10	8		7						
,06	5		8						
1.2	30	B	1						
1.0	18		2						+
110	16		3	1					
173	12		5						
,73 ,70 ,42	10 8		)						
, 10	4	<u> </u>	7						
,12	6		1						
116	0		-						
						-			
				1					
	11/18		A						
Avg Angle 4, 9 Avg $\Delta p$ & Temp									
Avg √Δp Average gas stream velocity, ft/sec									
		rate at actual co							
		e at standard cor							
						ll		JJ	
		+ 0.44 x %CO <sub>2</sub> + <sub>/s</sub> / 100) + 18 x B		(%O <sub>2</sub> + %CO <sub>2</sub> ))		where: M <sub>d</sub> = Dry mol	ecular weight sou	urce gas, lb/lb-r	nole.

 $T_{s(abs)} = T_s + 460$ 

 $P_s = P_{bar} + P_g / 13.6$ 

 $V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$ 

 $Q_{act} = 60 \times V_s \times A_s$ 

Comments

 $Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$ 

\*Barometric Pressure is at port elevation

M<sub>s</sub> = Wet molecular weight source gas, lb/lb-mole.

T<sub>s(abs)</sub> = Source Temperature, absolute(°R)

Ps = Absolute stack static pressure, inches Hg.

V<sub>s</sub> = Average gas stream velocity, ft/sec.

Q<sub>act</sub> = Volumetric flow rate of wet stack gas at actual, wacf/min

Q<sub>sd</sub> = Volumetric flow rate of dry stack gas at standard conditions,



	Client	Nev	v Indy	Source	o. 7 Hood Exhai	54	Pitot Coeff (C <sub>p</sub> ) 0.84		
	Location/Plant	Catav	vba, SC	W.O. Number	15730.001.008		Stack Area (	(A <sub>s</sub> ), ft <sup>2</sup> 2	3.76
	Operator	1934/	RE	Date	Date 6/24/2			rmo ID P	
			Run Number	Pres	-				
			Time	8:05-					
		Barometric Pre	ess (P <sub>bar</sub> ), in Hg*	29.6	8				
		Static P	ress (P <sub>g</sub> ), in H <sub>2</sub> 0	3					
		Source M	oisture (B <sub>WS</sub> ), %	~2	0				
			O <sub>2</sub> , %	20.	9				
			CO <sub>2</sub> , %	B					
	nic Flow nination	Traverse	Location	Leak Che	ck good ?		eck good ?	1	eck good ?
∆p at 0°	Angle yielding ∆p = 0	Port	Point	∆p, in H₂O	Source Temperature (T <sub>s</sub> ), °F	$\Delta$ p, in H <sub>2</sub> O	Source Temperature (T <sub>s</sub> ), °F	$\Delta p$ , in $H_2O$	Source Temperature (T <sub>s</sub> ), °F
.62	11	А	1		188				
05	13		2		189				
02	10		3		189				
01	4		4		184				
31	8		5		187				
16	7		6		188				
Ó	0		7		185				
.61	2		8		185				
05	14	В	1		186				
03	7		<i>j</i> 2		184				
02	3		3		185				
06	5		4		186				
25	18		5		KH				
61	2		6		182				
6	0		7		181				
0	0		8		181				
/g Angle			Avg ∆p & Temp						
			Avg √∆p						
	Avei	rage gas stream	velocity, ft/sec.			Jara v I			
	Vol. flow ra	ate at actual con	ditions, acf/min						
	Vol. flow rate a	at standard cond	litions, dscf/min						
М -	0.32 × 9/ 0 + 0	44 × 9/ CO + 0	28 v /100°/ /°/ C	+ % CO //		The William Control			

 $M_s = Md \times (1 - B_{ws} / 100) + 18 \times B_{ws} / 100$ 

 $T_{s(abs)} = T_s + 460$   $P_s = P_{bar} + P_g / 13.6$ 

 $V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$ 

Q<sub>act</sub> = 60 x V<sub>s</sub> x A<sub>s</sub>

Comments

 $Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$ 

\*Barometric Pressure is at port elevation

M<sub>d</sub> = Dry molecular weight source gas, lb/lb-mole.

M<sub>s</sub> = Wet molecular weight source gas, lb/lb-mole.

T<sub>s(abs)</sub> = Source Temperature, absolute(°R)

P<sub>s</sub> = Absolute stack static pressure, inches Hg.

V<sub>s</sub> = Average gas stream velocity, ft/sec.

 $Q_{act}$  = Volumetric flow rate of wet stack gas at actual, wacf/min  $Q_{sd}$  = Volumetric flow rate of dry stack gas at standard

conditions,



	Client	Nev	vindy	Sourc	e o. 8 Hood Exhau	181	Pitot Coe	eff (C <sub>p</sub> )	0.84
	Location/Plant	Catav	vba, SC	W.O. Numbe	15730.001.008		Stack Area (	A <sub>s</sub> ), ft <sup>2</sup>	73.76
	Operator	BEAL	'BE	Date	6/26/2		_ Pitot/Thei		アファ
		/	Run Number		lon				
			Time	16:45	- 16:53				
			ess (P <sub>bar</sub> ), in Hg*	79 66					
			ress (Pg), in H20	-,	71				
		Source M	loisture (B <sub>ws</sub> ), %	n	20				
			O <sub>2</sub> , %	2	7/20				
			CO <sub>2</sub> , %		8				
	nic Flow mination	Traverse	Location	Leak Ch	eck good ?		eck good ? / N		neck good ?
∆p at 0°	Angle yielding \Delta p = 0	Port	Point	Δp, in H₂O	Source Temperature (T <sub>s</sub> ), °F	Δp, in H <sub>2</sub> O	Source Temperature (T <sub>s</sub> ), °F	Δp, in H₂O	Source Temperature (T <sub>s</sub> ), °F
07	15	Α	1		186				A MARIE STATE
-,06	13		2		181				
.06	17		3		186				
.04	14		4		186				
.08	3		5		182				
04	4		6		180				
.03	4		7		181				
01	2		8		181		BarcingEure		
-,09	18	В	1		186				
07	16		2	300	186		Leading to		
06	14		3		180				
05	16		4		184				
.19	6		5		184				
-09	10		7		182				
05	1		8		180				
Avg Angle	0		Avg ∆p & Temp		100			Company Company	
	Vol. flow r	rage gas stream	Avg √∆p n velocity, ft/sec.						

 $P_s = P_{bar} + P_g / 13.6$ 

 $V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$ 

Comments

Q<sub>act</sub> = 60 x V<sub>s</sub> x A<sub>s</sub> Q<sub>sd</sub> = Q<sub>act</sub> x 17.64 x (1 - B<sub>ws</sub> / 100) x P<sub>s</sub> / T<sub>s(abs)</sub>

\*Barometric Pressure is at port elevation

M<sub>s</sub> = Wet molecular weight source gas, lb/lb-mole.

 $T_{s(abs)}$  = Source Temperature, absolute( ${}^{\circ}R$ )

P<sub>s</sub> = Absolute stack static pressure, inches Hg. V<sub>s</sub> = Average gas stream velocity, ft/sec.

Q<sub>act</sub> = Volumetric flow rate of wet stack gas at actual, wacf/min Q<sub>sd</sub> = Volumetric flow rate of dry stack gas at standard





### No. 2 and 3 Smelt Dissolving Tank Vents

	Client New Indy		Indy	Source	SDTV		Pitot Coeff (C <sub>p</sub> ) 0.84				
L	ocation/Plant	Cataw	ba, SC	W.O. Number	15730.001.008		Stack Area (A	s), ft <sup>2</sup> 27	.49		
		All the latest and the second	166		ATR		Pito√Thern	no ID <u>p320</u>	14025		
		FEE	Run Number	prelim a							
			Time	10:10							
		Barometric Pre	ess (P <sub>bar</sub> ), in Hg <sup>+</sup>	29,4							
	Static Press (Pg), in H20					The latest					
		Source M	oisture (B <sub>WS</sub> ), %								
			O <sub>2</sub> , %								
			CO <sub>2</sub> , %								
Cycloni Determ	ic Flow	Traverse	Location	Leak Che	eck good ?		eck good ?		eck good ?		
	Angle	- T W.			Source Temperature	Δр,	Source Temperature	Δр,	Source Temperature		
at o°	yielding ∆p = 0	Port	Point	Δp, in H <sub>2</sub> O	(T <sub>s</sub> ), °F	in H <sub>2</sub> O	(T <sub>s</sub> ), °F	in H <sub>2</sub> O	(T <sub>s</sub> ), °F		
4	5	А	1								
4	5		2					and the second of			
3	4		3			Part of the			Bridge Co.		
6	3		4						K H E I		
0	2		5								
59	6		6								
55	. 6		7								
05	7		8								
06	6	В	1								
65	6		2								
03	5	114	3								
03	4		4								
.03	4		5								
05	5		6								
.66	7		7								
.06	8		8								
Angle	5.18		Avg ∆p & Temp								
Avg √∆p											
Average gas stream velocity, ft/sec.				W. T.							
	Vol. flow	v rate at actual co	onditions, acf/min					4			
	Vol. flow rat	e at standard co	nditions, dscf/min					ie e			
		0.44 x %CO <sub>2</sub> +	0.28 x (100% - (%	%O <sub>2</sub> + %CO <sub>2</sub> ))		where: M <sub>d</sub> = Dry mole	ecular weight sour	ce gas, lb/lb-mo	ole.		

 $T_{s(abs)} = T_s + 460$  $P_s = P_{bar} + P_q / 13.6$ 

 $V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$ 

Q<sub>act</sub> = 60 x V<sub>s</sub> x A<sub>s</sub>  $Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$ 

\*Barometric Pressure is at port elevation

M<sub>s</sub> = Wet molecular weight source gas, lb/lb-mole.

T<sub>s(abs)</sub> = Source Temperature, absolute(°R)

P<sub>s</sub> = Absolute stack static pressure, inches Hg.

V<sub>s</sub> = Average gas stream velocity, ft/sec.

Q<sub>act</sub> = Volumetric flow rate of wet stack gas at actual, wacf/min

Q<sub>sd</sub> = Volumetric flow rate of dry stack gas at standard conditions,



Comments





### No. 1 AND 2 COMBINATION BOILERS

	Client	New	Indy	Source	No. 1 Combi	nation Boiler	Pitot Coe	ff (C <sub>p</sub> )	0.84
L	Location/Plant Catawba, SC		W.O. Number	15730.0	001.008	_		78.54	
	Operator	ATR		Date	6123	121	_ Pitot/Ther	mo ID P172	1 A010
			Run Number	prelim	Cyclonit				
			Time	9:36					
		Barometric Pre	ess (P <sub>bar</sub> ), in Hg*	29.0					
		Static Pr	ress (Pg), in H <sub>2</sub> 0						
		Source Mo	oisture (B <sub>WS</sub> ), %						
			O <sub>2</sub> , %						
			CO <sub>2</sub> , %				Will have		
Cycloni		Traverse	Location	Leak Che			eck good ?		eck good ?
∆p at	Angle yielding			Δр,	Source Temperature	Δp,	Source Temperature	Δр,	Source Temperature
0°	∆p = 0	Port	Point	in H <sub>2</sub> O	(T <sub>s</sub> ), °F	in H <sub>2</sub> O	(T₅), °F	in H <sub>2</sub> O	(T <sub>s</sub> ), °F
.68	15	Α	1						
.06	12	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2						
.06	10		3			Name of Asset		194 September 1950	
.09	14	В	1						
,00	10	В	2						
,08	13		3						
.04	13		4						
,09	10	С	1						
.01	12		2						
.68	16		3						
,06	10		4						
.69	-	D	1						
.08	13		2						
.67	12		3					V-A-15	
.08	13		4						
Avg Angle	11.9	1	Avg ∆p & Temp						
			Avg √∆p						
	Av	erage gas strean	n velocity, ft/sec.						
	Vol. flow	rate at actual co	nditions, acf/min	- 13 =					
	Vol. flow rate	e at standard con	ditions, dscf/min						
$M_s = T_{s(abs)} = P_s =$	Md x (1 - B <sub>ws</sub> T <sub>s</sub> + 460 P <sub>bar</sub> + P <sub>g</sub> / 13.	/ 100) + 18 x B <sub>w</sub>		O <sub>2</sub> + %CO <sub>2</sub> ))		$M_s$ = Wet mol $T_{s(abs)}$ = Source $P_s$ = Absolute	ecular weight sou ecular weight sou ce Temperature, a stack static press gas stream veloc	rce gas, lb/lb-mo absolute(°R) sure, inches Hg.	

 $Q_{act} = 60 \times V_s \times A_s$  $Q_{sd} = Q_{act} \times 17.64 \times (1 - B_{ws} / 100) \times P_s / T_{s(abs)}$ 

\*Barometric Pressure is at port elevation

Comments

 ${
m Q}_{
m act}$  = Volumetric flow rate of wet stack gas at actual, wacf/min  ${
m Q}_{
m sd}$  = Volumetric flow rate of dry stack gas at standard

conditions,



	Client	New Indy		Source No. 2 Combination		ination Boiler	ion Boiler Pitot Coeff (C <sub>p</sub> ) 0.84			
	Location/Plant	Cataw	ba, SC		15730.			A <sub>s</sub> ), ft <sup>2</sup>	ft <sup>2</sup> 78.54	
	Operator	ATR		Date	6/24	1/21	Pitot/Ther	mo ID <u><i>P17</i></u>	2/4010	
		Run Number		Date 6/24  frelim cyclenic  11:58  29.65						
			Time	11:58						
		Barometric Pre	ess (P <sub>bar</sub> ), in Hg*	29.6	5					
		Static P	ress (P <sub>g</sub> ), in H <sub>2</sub> 0			Homey				
		Source M	oisture (B <sub>WS</sub> ), %							
			O <sub>2</sub> , %							
			CO <sub>2</sub> , %							
	nic Flow mination	Traverse	Location	Leak Che	ck good ?		eck good ?		heck good ?	
∆p at	Angle yielding			Δρ,	Source Temperature	Δр,	Source Temperature	Δр,	Source Temperature	
0°	Δp = 0	Port	Point	in H <sub>2</sub> O	(T <sub>s</sub> ), °F	in H <sub>2</sub> O	(T <sub>s</sub> ), °F	in H <sub>2</sub> O	(T <sub>s</sub> ), °F	
107	9	Α	1							
.07	16		2							
.08	10		3					- Masses		
107	12		4							
109	15	В	1							
.64	12		2						Manning A. messo	
.08	12		3							
.08	10		4							
.08	10	С	1							
.67	16		2							
107	12		3							
.08	12		4							
.06	10	D	1							
108	13		2							
.08	15		3							
.67	13		4	Esatiblishia						
Avg Angle	11.56		Avg ∆p & Temp				Wall Co			
			Avg √∆p							
	Ave	rage gas stream	velocity, ft/sec.							
	Vol. flow r	ate at actual cor	ditions, acf/min					The Life is		
	Vol. flow rate a	at standard cond	litions, dscf/min							
M <sub>d</sub> =	0.32 x %O <sub>2</sub> + 0 Md x (1 - B <sub>ws</sub> /	.44 x %CO <sub>2</sub> + 0.	28 x (100% - (%0	O <sub>2</sub> + %CO <sub>2</sub> ))		where:	cular weight co	e gas lh/lh ma	lo.	
T <sub>s(abs)</sub> =	T <sub>s</sub> + 460					M <sub>s</sub> = Wet mole	cular weight source cular weight source	ce gas, lb/lb-mo		
F <sub>s</sub> =	$P_{bar} + P_g / 13.6$					T <sub>s(abs)</sub> = Source	e Temperature, ab	solute(°R)		

Q<sub>sd</sub> = Q<sub>act</sub> x 17.64 x (1 - B<sub>ws</sub> / 100) x P<sub>s</sub> / T<sub>s(abs)</sub>

\*Barometric Pressure is at port elevation

P<sub>s</sub> = Absolute stack static pressure, inches Hg.

V<sub>s</sub> = Average gas stream velocity, ft/sec.

Q<sub>act</sub> = Volumetric flow rate of wet stack gas at actual, wacf/min

Q<sub>sd</sub> = Volumetric flow rate of dry stack gas at standard conditions,



 $Q_{act} = 60 \times V_s \times A_s$ 

Comments

 $V_s = 85.49 \times C_p \times \sqrt{\Delta p_{avg}} \times \sqrt{(T_{s(abs)} / (P_s \times M_s))}$ 



#### STRATIFICATION AND RESPONSE TIME CHECKS



#### No. 1 Combination Boiler

WO# 15730.001.008

Source: No. 1 Combination Boller

Operating load: Normal



#### Source

Client:

Date:

**New Indy** 

Location: Catawba, SC 6/23/2021

Port	Point	02	% difference from Mean	Absolute difference	CO2	% difference from Mean	Absolute difference	SO2	% difference from Mean	Absolute difference
D	1	12.55 🗸	3.8%	0.454	7.10	6.0%	0.454	264.5	2.8%	7,250
	2	12.50	3.3%	0.404	7.25	4.0%	0.304	284.0 -	10.4%	26.750
	3	12.25	1.3%	0.154	7.40 V	2.0%	0.154	281.5v	9.4%	24,250
	4	12.45	2.9%	0.354	7.20	4.7%	0.354	276.5	7.5%	19,250
	5	12.10	0.0%	0.004	7.50 -	0.7%	0.054	263.5	2.4%	6.250
	6	12.00	0.8%	0.096	7.60 V	0.6%	0.046	243.0	5.5%	14.250
С	1	12.10	0.0%	0.004	7.45	1.4%	0.104	259.5	0.9%	2.250
	2	12.05 V	0.4%	0.046	7.65	1.3%	0.096	261.0 V	1.5%	3.750
	3	11.55 V	4.5%	0.546	8.20 🗸	8.5%	0.646	252.5	1.8%	4.750
	4	11.65 🗸	3.7%	0.446	7.95	5.2%	0.396	231.5	// 10.0%	25.750
	5	11.95	1.2%	0.146	7.70	1.9%	0.146	226.0	, 12.1%	31.250
	6	12.00	0.8%	0.096	7.65	1.3%	0.096	243.5	5.3%	13.750
Mean:		12.10			7.55			257.25		

	Compliance Testing	
Results	Not Stratified per O2	
Sampling Approach	Sampled at single point which most closely represented the mean	

	EPA Part 60 Testing
Results	Not Stratified per O2
Sampling Approach	Sampled at 0.4m, 1.0m and 2.0m from stack wall or sampled at 16.7%, 50%, and 83.3% of duct diameter

EPA Part 75 Testing								
Results	Not Stratified per O2							
Sampling Approach	Sampled at single point located no less than 1m from the stack wall and located on the same line as the traverse test							

Per EPA Method 7E, a 12 point traverse was conducted to measure for stratification of the flue gas. According to Method 7E, the gas stream can stratified, minimally stratified, or not stratified. If at each point any pollutant or diluent is determined to be less than 5% or 0.5 ppm different than the mean concentration, the source is not stratified. If at each point any pollutant or diluent is determined to be greater than 5% but less than 10% or greater than 0.5 ppm but less than 1.0 ppm different than the mean concentration, the source is minimally stratified. If at any point the pollutants and diluents are greater than 10% or 1.0 ppm different than the mean concentration, the source is stratified.

Per EPA Part 60, a 12 point traverse was conducted to measure for stratification of the flue gas. If at each point any pollutant or diluent is determined to be less than 10% different than the mean concentration, the source is not stratified. If at any point the pollutants or dilluents are greater than 10% different than the mean concentration, the source is stratified.

Per EPA Part 75, a 12 point traverse was conducted to measure for stratification of the flue gas. If at each point any pollutant or diluent is determined to be less than 5% different than the mean concentration, the source is not stratified. If at any point the pollutants are determined to be less than 3.0 ppm less than 3.0 ppm or the diluents determined to be less than 0.3% different than the mean concentration, the source is not stratified. If at any point the pollutants or diluents are greater than 5%, the pollutants are greater than 3.0 ppm, or the diluents are greater than 0.3% different than the mean concentration the source is stratified.



Number 0

Client: New Indy Location: Catawba, SC

lew Indy

Project Number: 15730.001.008

Source: No. 1 Combination Boiler

Calibration 1

Operator: VD
Date: 23 Jun 2021

Timo	0	2	C	$O_2$	S	O <sub>2</sub>
rime	mv	%	mv	%	mv	ppm

#### **Stratification Check**

Response time - 4 minutes, timed during 1st bias Points Selected by Table 1-2 of EPA Method 1

Points Selected by Table 1-2 of EPA Method 1											
Port D Point 1	. –										
08:53	4339	13.0	2768	6.8	2406	241					
08:54						230					
	4339					223					
08:56	4186			7.0	2077	208					
08:57	4317	13.0		7.2		203					
08:58	4391	13.2		6.9	2221	222					
08:59	4518	13.6		6.7	2311	231					
09:00	4563	13.7	2543	6.3	2383	238					
			oint 2								
09:01	4490	13.5	2549	6.3	2367	237					
09:02	4449	13.4		6.4	2376	238					
09:03	4246	/		6.6	2389	239					
09:04	4262	12.8	2848	7.0	2338	234					
09:05	4234	12.7	2846	7.0	2288	229					
09:06	4192	12.6	2870	7.1	2708	271					
09:07	4163	12.5	2907	7.2	2808	281					
09:08	4169	12.5	2949	7.3	2873	287					
			oint 3								
09:09	4239	12.7	2917	7.2	2776	278					
09:10	4239	12.7	2866	7.1	2526	253					
09:11	4099			7.1	2470	247					
09:12	4083			7.5		236					
09:13	4169	12.5		7.5	2334	234					
09:14	4154	12.5		7.2	2763	276					
09:15	4071	12.2	2961	7.3	2847	285					
09:16	4084	12.3	3043	7.5	2778	278					
		F	oint 4								
09:17	4145				2632	263					
09:18	4171			7.3	2537	254					
09:19	4209	12.6	2922	7.2	2590	259					
09:20	4198	12.6	2880	7.1	2538	254					
09:21	4139	12.4	2891	7.2	2560	256					
09:22	4172	12.5	2934	7.3	2801	280					
09:23	4163	12.5	2900	7.2	2873	287					
09:24	4133	12.4	2906	7.2	2657	266					
		F	Point 5								
09:25	4175	12.5	2919	7.2	2406	241					

Number 0

Client: New Indy Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

T:	0	2	CC	)2	SC	)2	
Time	mv	%	mv	%	mv	ppm	
09:26	4232	12.7	2872	7.1	2308	231	
09:27	4241	12.7	2826	7.0	2273	227	
09:28	4169	12.5	2822	7.0	2447	245	
09:29	4091	12.3	2897	7.2	2770	277	
09:30	4011	12.1	2969	7.3	2819	282	
09:31	4029	12.1	3033	7.5	2821	282	
09:32	4013	12.1	3034	7.5	2453	245	
			uffer fell				
09:33	5096	15.3	2841	7.0	1574	158	
09:34	5110	15.3	2003	4.9	1594	160	
09:35	4584	13.8	1940	4.8	2221	222	
			oint 6				
09:36	3905	11.7	2614	6.5	2642	264	
09:37	3914	11.8	3145	7.8	3031	303	
09:38	3956	11.9	3132	7.8	2875	288	
09:39	3989	12.0	3101	7.7	2929	293	
09:40	3980	12.0	3068	7.6	2649	265	
09:41	4021	12.1	3087	7.6	2464	247	
09:42	4013	12.1	3057	7.6	2374	238	
09:43	3957	11.9	3061	7.6	2474	248	
	Inter	ference	e from o	pen p	ort		
09:44	4003	12.0	3129	7.7	2424	243	
09:45	4594	13.8	2963	7.3	2253	225	
09:46	4365	13.1	2490	6.2	2512	251	
		P	Point 1				
09:47	4028	12.1	2787	6.9	2643	264	
09:48	4021	12.1	3046	7.5	2444	245	
09:49	4131	12.4	3041	7.5	2438	244	
09:50	4160	12.5	2942	7.3	2344	235	
09:51	4158	12.5	2894	7.2	2593	259	
09:52	4204	12.6	2890	7.1	2577	258	
09:53	4191	12.6	2852	7.1	2665	267	
09:54	4170	12.5	2864	7.1	2615	262	
		Por	t Chang	е			
09:55	4202	12.6	2878	7.1	2634	264	
09:56	4125	12.4	2869	7.1	2415	242	
09:57	4086	12.3	2946	7.3	2459	246	
09:58	5619	16.9	2802	6.9	902	91	
09:59	6924	20.8	294	0.7	122	13	
10:00	6928	20.8	6	0.0	59	6	
10:01	6932	20.8	6	0.0	40	4	

#### RUN DATA Number 0

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

 Tire	C	)2	CC	)2	SC	)2	2		
Time	mv	%	mv	%	mv	ppm			
10:02	6934	20.8	6	0.0	30	3			
10:03	6937	20.8	6	0.0	23	3			
10:04	6941	20.8	6	0.0	16	2			
10:05	6940	20.8	6	0.0	12	2			
10:06	5040	15.1	388	0.9	1610	161			
		Port	<b>C</b> Point	1					
10:07	3989	12.0	2906	7.2	2393	239			
10:08	4005	12.0	3070	7.6	2375	238			
10:09	4016	12.1	3076	7.6	2668	267			
10:10	4046	12.2	3053	7.6	2778	278			
10:11	4028	12.1	3027	7.5	2772	277			
10:12	4084	12.3	3027	7.5	2651	265			
10:13	4050	12.2	2991	7.4	2596	260			
10:14	3999	12.0	3032	7.5	2590	259			
		F	Point 2						
10:15	4016	12.1	3070	7.6	2528	253			
10:16	3911	11.8	3083	7.6	2523	252			
10:17	3855	11.6	3188	7.9	2826	283			
10:18	3872	11.6	3255	8.1	2823	282			
10:19	3884	11.7	3244	8.0	2803	280			
10:20	4008	12.0	3218	8.0	2575	258			
10:21	4003	12.0	3094	7.7	2638	264			
10:22	4036	12.1	3083	7.6	2575	258			
		F	Point 3						
10:23	4043	12.1	3061	7.6	2489	249			
10:24	4020	12.1	3046	7.5	2518	252			
10:25	3931	11.8	3087	7.6	2785	279			
10:26	3849	11.6	3188	7.9	2818	282			
10:27	3789	11.4	3283	8.1	2757	276			
10:28	3759	11.3	3351	8.3	2443	244			
10:29	3839	11.5	3365	8.3	2509	251			
10:30	3866	11.6	3290	8.1	2534	254			
		F	Point 4						
10:31	3886	11.7	3251	8.0	2680	268			
10:32	3900	11.7	3236	8.0	2566	257			
10:33	3884	11.7	3233	8.0	2871	287			
10:34	3917	11.8	3228	8.0	2764	277			
10:35	3995	12.0	3174	7.9	2260	226			
10:36	3983	12.0	3095	7.7	1976	198			
10:37	3842	11.5	3150	7.8	2298	230			
10:38	3913	11.8	3272	8.1	2328	233			

Number 0

Client: New Indy

Location: Catawba, SC

Source: No. 1 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Time	$O_2$		CC	$O_2$	SO <sub>2</sub>	
 Time	mv	%	mv	%	mv	ppm
		F	oint 5			
10:39	4002	12.0	3182	7.9	2024	203
10:40	4039	12.1	3096	7.7	1908	191
10:41	4118	12.4	3033	7.5	2372	237
10:42	4042	12.1	2973	7.4	2540	254
10:43	3981	12.0	3040	7.5	2288	229
10:44	3976	11.9	3113	7.7	2001	200
10:45	3996	12.0	3123	7.7	2186	219
10:46	3966	11.9	3104	7.7	2330	233
		F	oint 6			
10:47	3995	12.0	3128	7.7	2014	202
10:48	4059	12.2	3089	7.6	2056	206
10:49	4040	12.1	3046	7.5	2233	223
10:50	4029	12.1	3039	7.5	2260	226
10:51	3949	11.9	3065	7.6	2304	231
10:52	4019	12.1	3118	7.7	2156	216
10:53	4007	12.0	3067	7.6	2390	239
10:54	4010	12.0	3091	7.7	2483	248
Avgs	4288	12.9	2787	6.9	2323	232

## Sample and Velocity Traverse Point Data Sheet - Method 4-3 SDTVs, & #1-2 CBs Emission Report

Client		New Indy	4	Operator	VD
Loaction/Plant		Catawba, SC	. 1	Date	21-Jun-21
Source	No.	1 Combination Boiler		W.0. Number	15730.001.008
ouct Type	7	Circular Particulate Traverse		Rectangular Duct Velocity Traverse	Indicate appropriate type
laverse Type		raniculate maverse		velocity fraverse	

Distance from far wall to outside of port (in.) = C	127.5
Port Depth (in.) = D	7.5
Depth of Duct, diameter (in.) = C-D	120
Area of Duct (ft <sup>2</sup> )	78.54
Total Traverse Points	12
Total Traverse Points per Port	6

Rectangular Ducts Only							
Width of Duct, rectangular duct only (in.)							
Total Ports (rectangular duct only)							

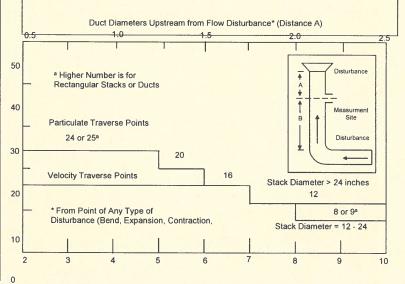
	Trave	erse Point Loca	itions
Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	4.4	5 1/2	13
2	14.6	17 1/2	25
3	29.6	35 1/2	43
4	70.4	84 1/2	92
5	85.4	102 1/2	110
6	95.6	114 1/2	122
7			
8	1.00		
9			
10			
11			
12			

#### Equivalent Diameter = (2\*L\*W)/(L+W)

			211	Trave	se Po	int Loc	ation I	ercen	t of Sta	ack -Ci	rcular		
			Number of Traverse Points										
		1	2	3	4	5	6	7	8	9	10	11	12
Т	1		14.6		6.7		4.4	II E	3.2		2.6		2.1
Г	2	2000	85.4	71/21	25		14.6	A CALLE	10.5	140	8.2	火川戦	6.7
a	3	11111			75		29.6		19.4		14.6		11.8
v L e o	4		\$372E	PLAN.	93.3		70.4	200	32.3	Brack.	22.6	2550	17.7
L C	5				2 1 7		85.4		67.7		34.2		25
s a	6				·	Harris	95.6		80.6		65.8	d Enco	35.6
e t	7								89.5		77.4		64.4
Po	8	17/17		101/25	(1) (2) (1) (1) (2) (1)	ASD Y	Light St.	Va. in	96.8	11/8%	85.4	UIAS.	75
P o	9										91.8		82.3
i	10		10/5	ME	T. Ser	y Vigo		Men E	<b>BIRNE</b>	gira.ii	97.4	100	88.2
n	11												93.3
t	12	3E0=	3219	211/0	1618		W. 1.35	DV48	编制	Control of	e Ne		97.9

Flow Disturbances	
Upstream - A (ft)	45.0
Downstream - B (ft)	32.0
Upstream - A (duct diameters)	4.50
Downstream - B (duct diameters)	3.20

Stratification Check



Duct Diameters Downstream from Flow Disturbance\* (Distance B)

		m <sup>t</sup>	Traverse Point Location Percent of Stack -Rectangular										
			Number of Traverse Pc nts										
		1	2	3	4	5	6	7	8	9	10	11	12
Т	1	T II	25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
٢	2	A MIN	75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
a	3		- 11	83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
v L e o	4	是雪孙	Ships.	Jan 1999	87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
L C	5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
s a	6	1511	HISTORY.	Jan 1	MAI	TERMIN .	91.7	78.6	68.8	61.1	55.0	50.0	45.8
e t	7	1,3						92.9	81.3	72.2	65.0	59.1	54.2
P o	8	133	Le de			4816		776	93.8	83.3	75.0	68.2	62.5
0 1	9						H			94.4	85.0	77.3	70.8
i	10	Marin.	1786			450		1	ALL KOL		95.0	86.4	79.2
n	11					Δ						95.5	87.5
t	12	92 6701	Page	14 127		11/12/2	483.	Uhit(d	100	112,51	The last	250	95.8

Tape Measure I.D. #

674

Rectangular Stack Points & Matrix 9 - 3 x 3 12 - 4 x 3 16 - 4 x 4 20 - 5 x 4 25 - 5 x 5 30 - 6 x 5 36 - 6 x 6 42 - 7 x 6 49 - 7 x 7

Port Diam. (in) = \_\_\_\_\_ Number of Ports = \_\_\_\_\_





### No. 2 COMBINATION BOILER

Client New Indy Location Catawba, SC Date 6/24/2021 WO# 15730.001.008 Source No. 2 Combination Boiler

#### Source

Port	Point	02	% difference from Mean	Absolute difference	CO2	% difference from Mean	Absolute difference	SO2	% difference from Mean	Absolute difference
В	1	12.30	1.1%	0.142	7.45	4.0%	0.288	324.5	0.9%	2.875
	2	12.80	2.9%	0.358	6.95	3.0%	0.213	308.0 ₩	4.2%	13.625
	3	12.45	0.1%	0.008	7.20	0.5%	0.037	323.5 6	0.6%	1.875
	4	11.80	5.2%	0.642	6.85	4.4%	0.313	335.0	4.2%	13.375
	5	12.70 V	2.1%	0.258	7.20	0.5%	0.037	313.5	2.5%	8.125
	6	12.10	2.7%	0.342	7.50	4.7%	0.337	303.5	5.6%	18.125
С	1	12.95	4.1%	0.508	7.15	0.2%	0.013	343.5	6.8%	21.875
	2	12.15 v	2.3%	0.292	7.15	0.2%	0.013	319.5	0.7%	2.125
	3	12.75 V	2.5%	0.308	6.80 -	5.1%	0.363	331.5	3.1%	9.875
	4	12.65	1.7%	0.208	6.90	3.7%	0.263	333.0	3.5%	11.375
	5	12.45	0.1%	0.008	7.20		0.037	318.5	//1.0%	3.125
	6	12.20	1.9%	0.242	7.60	6.1%	0.437	305.5	5.0%	16.125
Mean:		12.44			7.16			321.63		

Compliance Testing							
Results Minimally Stratified per O2							
Sampling Approach	Sampled at three points in line with the highest concentration at 16.7%,50%, and 83.3% or sampled at three points of 0.4m, 1.0m, and						

EPA Part 60 Testing							
Results	Not Stratified per O2						
Sampling Approach	Sampled at 0.4m, 1.0m and 2.0m from stack wall or sampled at 16.7%, 50%, and 83.3% of duct diameter						

EPA Part 75 Testing						
Results	Stratified					
Sampling Approach	Sampled at single point located no less than 1m from the stack wall and located on the same line as the traverse test					

Per EPA Method 7E, a 12 point traverse was conducted to measure for stratification of the flue gas. According to Method 7E, the gas stream can stratified, minimally stratified, or not stratified. If at each point any pollutant or diluent is determined to be less than 5% or 0.5 ppm different than the mean concentration, the source is not stratified. If at each point any pollutant or diluent is determined to be greater than 5% but less than 10% or greater than 0.5 ppm but less than 1.0 ppm different than the mean concentration, the source is minimally stratified. If at any point the pollutants and diluents are greater than 10% or 1.0 ppm different than the mean concentration, the source is stratified.

Per EPA Part 60, a 12 point traverse was conducted to measure for stratification of the flue gas. If at each point any pollutant or diluent is determined to be less than 10% different than the mean concentration, the source is not stratified. If at any point the pollutants or diluents are greater than 10% different than the mean concentration, the source is stratified.

Per EPA Part 75, a 12 point traverse was conducted to measure for stratification of the flue gas. If at each point any pollutant or diluent is determined to be less than 5% different than the mean concentration, the source is not stratified. If at any point the pollutants are determined to be less than 3.0 ppm less than 3.0 ppm or the diluents determined to be less than 0.3% different than the mean concentration, the source is not stratified. If at any point the pollutants or diluents are greater than 5%, the pollutants are greater than 3.0 ppm, or the diluents are greater than 0.3% different than the mean concentration the source is stratified.

N

Number 0

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Time

Calibration 1

mv

 $O_2$ 

mv

%

 $CO_2$ 

%

Project Number: 15730.001.008

Operator: **VD** 

SO<sub>2</sub>

ppm

mv

	se Time	- 4 min		med du		
Point	s selecte		able 1-2 B Point		A Wetho	a 1
12:03	4121	12.4	2975	7.4	3136	312
12:04	4225	12.4	2954	7. <del>4</del> 7.4	3085	307
12:04	4466	13.4	2797	7.4	3128	312
12:06	4312	13.4	2586	6.4	3283	327
12:07	4211	12.7	2755	6.9	3351	334
12:07	4103	12.7	2875	7.2	3396	338
12:09	4088	12.4	2971	7.2 7.4	3304	329
12:09	4101	12.3	3009	7.4 7.5	3211	329
12.10	4101		oint 2	7.5	3211	320
12:11	4161	12.5	2981	7.4	3140	313
12:11	4185	12.5	2926	7.4	3082	307
12:12	4165	12.5	2920	7.3 7.3	3062	305
12:13	4166	12.5	2917	7.3 7.4	3041	303
12:14	4243	12.8	2930	7.4	3063	305
12:16	4316	13.0	2839	7.3 7.1	3105	309
12:17	4280	12.9	2776	6.9	3137	312
12:17	4200	12.9	2808	7.0	3055	304
12.10	4224		oint 3	7.0	3033	304
12:19	4216	12.7	2866	7.1	3021	301
12:19	4210	12.7	2847	7.1 7.1	3103	309
12:21	4249	12.8	2837	7.1 7.1	3168	316
12:21		. — . –		7.1 7.0		319
	4326	13.0 12.9	2802		3206	
12:23	4288		2754	6.8	3258	325 319
12:24	4258	12.8	2778	6.9	3205	
12:25	4165	12.5	2843	7.1	3194	318
12:26	4129	12.4	2916	7.3	3301	329
12.27	4002	12.3	2960	7 1	2202	220
12:27	4093			7.4	3393	338
12:28	3796	11.4	3026	7.5	4221	421
12:29	3709	11.2	3320	8.3	4324	431
12:30	4274	12.9	3287	8.2	3850	384
12:31	4415	13.3	2769	6.9	3805	379
12:32	4279	12.9	2721	6.8	3499	349
12:33	4450	13.4	2833	7.0	3372	336
12:34	4482	13.5	2676	6.7	3354	334
12:35	4397	13.2	<b>Point 5</b> 2636	6.6	3369	336
12.00	1001	10.2	2000	0.0	5500	550

Number 0

Calibration 1

Client: New Indy Location: Catawba, SC

Source: No. 2 Combination Boiler

Project Number: 15730.001.008
Operator: VD

Time	$O_2$		CO <sub>2</sub>		SO <sub>2</sub>		
Time	mv	%	mv	%	mv	ppm	
12:36	4326	13.0	2722	6.8	3299	329	
12:37	4298	12.9	2761	6.9	3269	326	
12:38	4270	12.9	2778	6.9	3235	322	
12:39	4218	12.7	2839	7.1	3201	319	
12:40	4188	12.6	2884	7.2	3198	319	
12:41	4197	12.6	2908	7.2	3187	317	
12:42	4248	12.8	2908	7.2	3111	310	
	12 10		Point 6		0111	010	
12:43	4304	13.0	2847	7.1	3137	312	
12:44	4299	12.9	2793	6.9	3109	310	
12:45	4368	13.1	2775	6.9	3196	318	
12:46	4421	13.1	2705	6.7	3305	329	
12:47	4431	13.3	2655	6.6	3253	324	
12:48	4440	13.4	2638	6.6	3179	317	
12:49	4460	13.4	2634	6.5	3132	312	
12:50	4537	13.7	2590	6.4	3167	315	
40.54	4007		t Chang		0000	000	
12:51	4637	14.0	2500	6.2	2698	269	
12:52	6832	20.5	1490	3.7	269	27	
12:53	6942	20.9	15	0.0	85	8	
12:54	5605	16.9	118	0.2	2307	230	
12:55	4420	13.3	2357	5.9	3325	331	
			t C Port				
12:56	4332	13.0	2660	6.6	3321	331	
12:57	4421	13.3	2721	6.8	3382	337	
12:58	4342	13.1	2624	6.5	3466	345	
12:59	4070	12.3	2747	6.8	3665	365	
13:00	3992	12.0	3025	7.5	3853	384	
13:01	4129	12.4	3074	7.7	3750	374	
13:02	4237	12.8	2932	7.3	3483	347	
13:03	4362	13.1	2823	7.0	3412	340	
		F	Point 2				
13:04	4480	13.5	2671	6.6	3330	332	
13:05	4458	13.4	2583	6.4	3339	333	
13:06	4571	13.8	2576	6.4	3321	331	
13:07	4618	13.9	2452	6.1	3372	336	
13:08	4541	13.7	2420	6.0	3429	342	
13:09	4538	13.7	2489	6.2	3312	330	
13:10	4551	13.7	2505	6.2	3301	329	
13:11	4619	13.9	2479	6.2	3308	330	
	. 5 , 0		0		- 300		

Number 0

Client: New Indy

Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Time	0	)2	CC	)2	SC	) <sub>2</sub>
Time	mv	- %	mv	%	mv	ppm
		D	oint 3			
13:12	4531	13.6	2393	5.9	3470	346
13:13	4458	13.4	2436	6.1	3491	348
13:14	4280	12.9	2494	6.2	3423	341
13:15	4171	12.6	2694	6.7	3260	325
13:16	4253	12.8	2780	6.9	3269	326
13:17	4204	12.7	2720	6.8	3259	325
13:18	4213	12.7	2753	6.8	3297	328
13:19	4264	12.8	2746	6.8	3362	335
			oint 4			
13:20	4201	12.6	2704	6.7	3341	333
13:21	4339	13.1	2742	6.8	3271	326
13:22	4315	13.0	2621	6.5	3271	326
13:23	4297	12.9	2618	6.5	3356	334
13:24	4158	12.5	2682	6.7	3460	345
13:25	4197	12.6	2810	7.0	3434	342
13:26	4191	12.6	2783	6.9	3403	339
13:27	4208	12.7	2755	6.9	3281	327
	Poir	nt 5 (pro	ocess c	hange	d)	
13:28	4138	12.5	2779	6.9	3255	324
13:29	4113	12.4	2851	7.1	3302	329
13:30	4068	12.2	2911	7.2	3294	328
13:31	4040	12.2	2904	7.2	3313	330
13:32	3939	11.9	2999	7.5	3304	329
13:33	3950	11.9	3074	7.7	3333	332
13:34	3810	11.5	3103	7.7	3408	339
13:35	3647	11.0	3250	8.1	3867	385
4.5.			oint 6			
13:36	3452	10.4	3420	8.5	4106	409
13:37	3594	10.8	3572	8.9	3836	382
13:38	3761	11.3	3451	8.6	3698	368
13:39	3858	11.6	3268	8.1	3529	352
13:40	3944	11.9	3169	7.9	3491	348
13:41	3868	11.6	3110	7.7	3259	325
13:42	3941	11.9	3185	7.9	3215	320
13:43	4060	12.2	3067	7.6	3149	314
40.44	0007		Point 5	- 4	0447	0.40
13:44	3997	12.0	2970	7.4	3147	313
13:45	3992	12.0	3025	7.5	3193	318
13:46	4066	12.2	3030	7.5	3154	314
13:47	4065	12.2	2962	7.4	3153	314

Number 0

Client: New Indy Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

Time	C	)2	C	$O_2$	S	O <sub>2</sub>
Time	mv	%	mv	%	mv	ppm
13:48	4063	12.2	2932	7.3	3203	319
13:49	4068	12.2	2976	7.4	3148	314
13:50	4157	12.5	2933	7.3	3193	318
13:51	4119	12.4	2860	7.1	3201	319
Avgs	4274	12.9	2772	6.9	3260	325

Number 0

Client: New Indy Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: 15730.001.008

Operator: **VD** 

T: c	C	)2	C	) <sub>2</sub>	S	<b>D</b> <sub>2</sub>	
Time	mv	%	mv	%	mv	ppm	
	Stra	atificati	on Che	ck con	t.		
		Port	<b>C</b> Point	2			
13:56	4148	12.5	2790	6.9	3180	317	
13:57	4210	12.7	2786	6.9	3180	317	
13:58	4147	12.5	2761	6.9	3257	324	
13:59	4216	12.7	2784	6.9	3290	328	
14:00	4131	12.4	2758	6.9	3193	318	
14:01	4139	12.5	2836	7.1	3102	309	
14:02	4081	12.3	2848	7.1	3235	322	
14:03	3994	12.0	2911	7.2	3181	317	
			Point 6				
14:04	4001	12.0	3014	7.5	3223	321	
14:05	4121	12.4	2969	7.4	3164	315	
14:06	4107	12.4	2855	7.1	3117	310	
14:07	4033	12.1	2879	7.2	3157	314	
14:08	3993	12.0	2972	7.4	3124	311	
14:09	3990	12.0	2994	7.5	3132	312	
14:10	3818	11.5	3036	7.6	3217	320	
14:11	3864	11.6	3224	8.0	3181	317	
14:12	4036	12.2	3125	7.8	3108	310	
14:13	4037	12.2	2961	7.4	3020	301	
			t Chang		000	• • • • • • • • • • • • • • • • • • • •	
14:14	3982	12.0	2976	7.4	3069	306	
14:15	4051	12.2	3044	7.6	2597	259	
14:16	6805	20.5	1871	4.6	308	30	
14:17	6926	20.8	22	0.0	91	9	
14:18	5009	15.1	367	0.9	2413	240	
			B Point				
14:19	3986	12.0	2860	7.1	3212	320	
14:20	3971	12.0	3018	7.5	3032	302	
14:21	3904	11.8	3065	7.6	2897	289	
14:22	3947	11.9	3128	7.8	2928	292	
14:23	4006	12.1	3071	7.6	2951	294	
14:24	4007	12.1	3015	7.5	2973	296	
14:25	4009	12.1	3019	7.5	3041	303	
14:26	4010	12.1	3014	7.5	3055	304	
0			Point 4				
14:27	4012	12.1	3009	7.5	2995	298	
14:28	3996	12.0	3007	7.5	2988	298	
14:29	3899	11.7	3051	7.6	3126	311	
14:30	3877	11.7	3146	7.8	3154	314	
					0.0.		

Number 0

Client: New Indy
Location: Catawba, SC

Source: No. 2 Combination Boiler

Calibration 1

Project Number: **15730.001.008**Operator: **VD** 

Time	$O_2$		CO <sub>2</sub>		SO <sub>2</sub>	
Time	mv	%	mv	%	mv	ppm
14:31	3916	11.8	3167	7.9	3081	307
14:32	3940	11.9	3110	7.7	2924	291
14:33	3899	11.7	3097	7.7	2878	287
Avgs	4190	12.6	2804	7.0	2915	290

## Sample and Velocity Traverse Point Data Sheet - Method 16730,001,008 Paper Machine, 4873 STOY, 48 H1-2 CBs Emission Report

Clien	t	New Indy		Operator		VD
Loaction/Plan	t	Catawba, SC	1.16	Date		21-Jun-21
Source	e No	. 2 Combination Boiler		W.0. Number	r	15730.001.008
Duct Type	7	Circular		Rectangular Duct	Ind	ica.e appropriate type
Traverse Type		Particulate Traverse		Velocity Traverse		

Distance from far wall to outside of port (in.) = C	129.0
Port Depth (in.) = D	9.0
Depth of Duct, diameter (in.) = C-D	120
Area of Duct (ft²)	78.54
Total Traverse Points	12
Total Traverse Points per Port	6

Rectangular Ducts Only	
Width of Duct, rectangular duct only (in.)	
Total Ports (rectangular duct only)	12000

	Trave	erse Point Loca	tions
Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	4.4	5 1/2	14 1/2
2	14.6	17 1/2	26 1/2
3	29.6	35 1/2	44 1/2
4	70.4	84 1/2	93 1/2
5	85.4	102 1/2	111 1/2
6	95.6	114 1/2	123 1/2
7			
8			15.549
9			
10	4		
11			
12			

Equivalent Diameter = (2\*L\*W)/(L+W)

				Trave	rse Poi	nt Lo	cation P	erce	nt of Sta	ck -C	ircular		
		Number of Traverse Points											
		1	2	3	4	5	6	7	8	9	10	11	12
L	1	-	14.6		6.7		4.4		3.2		2.6		2.1
	2	LI BE	85.4	F.E	25	357	14.6	X	10.5	N.	8.2		6.7
E	3	m-I		. 11, 10	75		29.6		19.4		14.6	11/4	11.5
	4			N.	93.3	Sie	70.4	9.01	32.3		22.6	30.0	17.
	5			di.	1.15	1	85.4		67.7		34.2	R/=	25
	6		25/10	746	155	6.76	95.6	250	80.6	43	65.8	19213	35.0
	7	11/2/21		Judo	100		12	11/1	89.5		77.4		64.4
	8			100	100	SE ST	19.5%	100	96.8		85.4	les ala	75
	9			13		Na	tocal i			0.01	91.8		82.3
	10	9.21	-	THE S	Will a				13/2/3/3		97.4	41.50	88.2
[	11				1,1		1		3.9			- 1	93.
ſ	12		3644	Total .		The state of	1513		314	Till	E E		97.9

Flow Disturbances							
Upstream - A (ft)	45.0						
Downstream - B (ft)	32.0						
Upstream - A (duct diameters)	4.50						
Downstream - B (duct diameters)	3.20						

Diagram of Stack

Stratification check Duct Diameters Upstream from Flow Disturbance\* (Distance A) 50 <sup>a</sup> Higher Number is for Rectangular Stacks or Ducts 40 Particulate Traverse Points 24 or 25ª 20

Duct Diameters Downstream from Flow Disturbance\* (Distance B)

			Tr	averse	<b>Point</b>	Locat	ion Pe	rcent o	f Stac	k -Rec	tangul	ar	
		Number of Traverse Points											
		1	2	3	4	5	6	7	8	9	10	- 11	12
F	1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
ravLeorcsaetiPoonint	2	15146	75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
	3	10.5	14	83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
	4		2333	100	87.5	70.0	58.3	50.0	4 .8	38.9	35.0	31.8	29.2
	5	11.5	1	1847	7	90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
	6	4137	543	17/6/6	70	1000	91.7	78.6	68.8	61.1	55.0	50.0	45.8
	7	Sint.	Z ant			Pic	118	92.9	81.3	72.2	65.0	59.1	54.2
	8	W.S.	Sec.	1600	28.2	Wild.	PER I		93.8	83.3	75.0	68.2	62.5
	9	B.D		4			1115		1,00	94.4	85.0	77.3	70.8
	10	MG)	Trans.	到这			72(3)		KO K	120	95.0	86.4	79.2
	11				1.11			29 K				95.5	87.5
	12	10	400	100		100	Sold	30-000	12.18	100	100		95.8

Tape Measure I.D. #

Stack Diameter > 24 inches

Stack Diameter = 12 - 24

Rectangular Stack Points & Matrix  $9 - 3 \times 3$ 12 - 4 x 3 16 - 4 x 4 20 - 5 x 4 25 - 5 x 5 30 - 6 x 5 36 - 6 x 6 42 - 7 x 6

Port Diam. (in) = Number of Ports =



30

20

10

Velocity Traverse Points

\* From Point of Any Type of

Disturbance (Bend, Expansion, Contraction,





#### **INTERFERENCE CHECKS**



## Method 7E-Interfernce Response

600 Series NDIR/PMD, 100/200/300 Series NDIR/PMD, ZRE w/PMD 1/26/2011 PMD 602-P Applies to Models: Date of Test:

Analyzer Type: Model:

U09018-M

20.7% O2, balance N2

Calibration Span:

Serial Numer:

Test Gas	Interfernt Concentration	Zero Response	Spa	Interferent Respons
202	513 ppm	0.000%	0.020%	0.020%
H20	0.82%	0.015%	0.020%	0.020%
02N	10.00 ppm	%000.0	0.000%	0.000%
CN	94.9 ppm	%000.0	%000.0	%000.0
NO2	maa 8.66	0.000%	0.000%	%000.0
	maa 006	0.000%	0.000%	%000.0
CHA	maa 6.06	0.000%	0.000%	%000'0
	27.99ppm	0.000%	0.000%	%000.0
Sim of Besponses				0.004%
% of Calibration Span				0.019%



## Method 7E-Interfernce Response

Applies to Models:

Analyzer Type:

Zero Response | Span Response | Interferent Response 0.000% 0.055% 0.010% 0.025% 0.010% 0.010% 0.010% 0.055% 0.010% 0.025% 0.010% 0.010% 0.000% 600 Series NDIR, 100/200/300 Series NDIR, ZRE 0.005% 0.005% 0.010% 0.010% 0.000% 0.055% Interfernt Concentration 20.2% CO2/Balance N2 101.0 ppm 102.6 ppm 100.0 ppm 1/26/2011 U09018-M 10.00 ppm 99.8 ppm 94.9 ppm 602-P 0.82% NDIR Calibration Span: Serial Numer: Date of Test: Test Gas Model: H20 N20 N02 **SO2** 9 00

0.010% 0.013% 0.064%

0.010%

0.010%

27.99ppm

% of Calibration Span Sum of Responses

CH4

E E



A Teledyne Technologies Company 9480 Carroll Park Drive San Diego, CA 92121-5201

August 4, 2014

To Whom It May Concern:

Teledyne Advanced Pollution Instrumentation has introduced new instrument models to replace our existing E Series gas analyzers. The new instruments are collectively referred to as our T Series models.

The fundamental design and all critical wetted, electronic, electrical and analytical components of the T Series instruments are identical to the E Series, including: UV sources, photo detectors, power supplies, pressure and flow transducers, pneumatic connectors and valves as well as external signal I/O connectors for serial data (RS-232/485 and Ethernet), analog concentration and status signals, and control inputs.

The design of all analytical algorithms, signal processing and control software algorithms are identical as well, including A/D measurements, digital signal filtering, concentration calculations, calibration factors and algorithms, temperature and pressure compensation, temperature control loops.

The primary differences between the models E Series and T Series instrument designs are provided below:

- 1. The 2 line by 40 character vacuum fluorescent display module is replaced by a 7" color LCD display with a touch screen interface. The current human user interface is emulated on the color, graphical display. The touch screen is used to emulate the existing 8 button context sensitive keyboard.
- 2. The software platform has been upgraded to support the graphical display and touchscreen. Software routines have been added to support the new analog input option, and a native Ethernet port on the CPU.
- 3. An upgraded CPU board that includes hardware to drive the LCD display and is backwards compatible with the current E-series CPU is used for the T-series analyzers.
- 4. A new front panel assembly has been designed to house the new display, and a new 9-pin connector will be added to the rear panel to support the new analog input option.
- 5. The new analog input option is designed to permit users to display and log, using the analyzer's internal data logger, signals from meteorological and other miscellaneous external sensors. None of the external signals are used in the calculations that yield calibrated concentration.

Internal production testing of the T Series analyzers that have been manufactured to date has shown that they meet the same analytical specifications as the equivalent E Series analyzers, including noise, linearity, drift, and response time.

We feel that, due to the nature of the changes described above and the testing performed to date, the modifications will not affect the performance characteristics of the analyzer.

Best Regards,

Doug Haugen

US National Sales Manager

Teledyne Advanced Pollution Instrumentation

(970) 224-3686

Douglas.haugen@teledyne.com

Method 7E Results	Method 7E Results for TAPI High Level Gas Analyzers	Inalyzers			ul .	Instrument Type					
Potential	Potential Interferent				M200EH CO2	342045	A4200E	MACHINE	MAZOUE	M803E 02	M803E CO2
Interferent Gas	Gas Concentration	M100EH	MZOOEIM	MZOUEH	Sensor	MZOIE	INISCOL	INISOCEINI	JOZCIA!	Sensor	Sensor
203	20 ppmv		0.012	-0.167	-0.014	0.001	-0.058	-0.092	-0.106	-0.061	-0.015
Z CN	15 ppmv	0.162			0.002		-0.015	-0.054	-0.035	-0.051	-0.015
NO.	15 ppmv	0.053			-0.026		-0.059	-0.007	0.041	-0.051	-0.027
N2O	10 apmy	-0.198	-0.033	-0.166	-0.036	0.040	0.113	-0.009		-0.041	-0.034
<u>}</u>	20 namy	-0.084	0.022	-0.211	0.000	-0.005			-2.518	-0.164	-0.034
3 E	50 namv	-0.051	-0.042	-0.461	-0.043	0.037	-0.025	-0.030	-0.068	0.000	-0.015
£ 2	SO pamy	-0.230	-0.035	-0.253	-0.038	0.030	-0.061	-0.128	0.000	-0.010	-0.008
- CO	15%	0.361	-2.397	-0.808		-1.076	0.470	0.313	7.843	-0.026	
NH3	10 nnmv	0000	0.000		0.000		0.000	0.000	0.000	0.000	0.000
HC	10 ppmv	0.047	0.168	-0.133	-0.032	0.078	-0.002	-0.087	0.073	-0.043	-0.027
H30	2 %	0000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Absolute Sum of Responses		1.186	2.710	2.198	0.191	1.268	0.803	0.720	10.685	0.447	0.175
Calibration Span		maa 06	90 ppm	mdd 06	15%	18 ppm	90 ppm	90 ppm	mdd 06	20.95 %	15%
Percent of Calibration Span	ion Span	1.318	3.011	2.442	1.273	7.046	0.892	0.800	11.872	2.134	1.163

# **Environmental Protection Agency**

Pt. 60, App. A-4, Meth. 7E

TABLE 7E-3—EXAMPLE INTERFERENCE CHECK GAS CONCENTRATIONS

Analyzer Type:

Potential	Concentrations <sup>2</sup> sample conditioning type	ole conditioning type
interferent gas1	Hot wet	Dried
Š	5 and 15%	5 and 15%
Q.H	25%	<del>1</del> %
Ş	15 ppmv	15 ppmv
Ŋ	15 ppmv	15 ppmv
O,N	10 ppmv	10 ppmv
8	50 ppmv	50 ppmv
Í.	10 ppmv	10 ppmv
£	50 pprmv	50 ppmv
SO,	20 ppmv	20 ppmv
H,	50 ppmv	50 ppmv
- P	10 ppmv	10 ppmv

(1) Any applicable gas may be eliminated or tested at a reduced level if the manufacturer has provided reliable means for limiting or scrubbing that gas to a specified level.

(2) As practicable, gas concentrations should be the highest expected at test sites.

TABLE 7E-4—INTERFERENCE RESPONSE

Date of Test:

			Analyzer response					
		: 41	Concentration (ppm)				Sum of Responses	% of Calibration Span
Model No.:	Serial No:	Calibration Span:	Test gas type					%





#### **PROJECT TEAM QUALIFICATIONS**

3	Weston Solutions, Inc.	: Integrated Air Services Employee Qualifications	loyee Qualific	cations	
				Years of E	Years of Experience
-					Emission
Name	Title/Position	Education/Training	QSTI	Total	Testing
		AAS - Electronic Engineering Tehcnology			
Alldredge, Bryan	Emissions Testing Specialist	Snead State Community College (1998)	QSTI 1 & 3	7	7
		BS - English Ed Jacksonville State University (2011)			
Bryant, Ashley	Report Coordinator	MA - English - Jacksonville State University (2012)	QSTI 1	6	6
		BA - Urban Environmental Studies			
Ennis, Brock	Emissions Testing Specialist	Birmingham-Southern College (2021)		1	1
		BS - Horticulture			
Dubay, Van	Emissions Testing Specialist	Auburn University (2007)	QSTI 1, 3, & 4	9	9
		BS - Environmental Science			
Hammonds, Natalie	Quality Manager	Auburn University (1998)	QSTI 1	23	18
		BA - Environmental Studies			
Hartsky, Chris	Emission Testing Specialist	Washington College (2016)		10	5
		BS - Biochemistry & Molecular Biology			
Lestochi, Cory	<b>Emissions Testing Specialist</b>	Penn State University (2019)	QSTI 1	1	1
		BS - Env. Science			
Roberts, Wayne	Operations Manager	AU (1992)		28	27
		BA - IDSC - Natural Resource			
Robinson, Tyler	Emissions Testing Specialist	Ecology, Sustainability - AU (2017)	QSTI 1	4	4
		BS - Zoology			
Simpkins, Templeton	Project Manager	Auburn University (1997)	QSTI 1 & 3	20	20



### APPENDIX I PROCESS OPERATING/PRODUCTION DATA





#### PULP DRYER

#### Pulp Dryer Vent Testing

#### Pulp Dryer Vent - 6/26/21

Run #		Start Time	Speed (FPM)		Steam Usage (10 <sup>3</sup> lbs/hr)	TRS Emis	ssions
	1	1230		105	68106		0.21
	2	1347		105	67090		0.18
	3	1506		105	67567		0.17
Average	· ·			105	67588		0.19





#### No. 3 Paper Machine Vents

#### Paper Machine Dryer Vent Testing

#### #3 Dryer Vent - 6/24/21

				Reel				TRS	
				Speed	b	Steam Usag	e	Emissio	ns
Run#		Start	Time	(FPM	)	(10 <sup>3</sup> lbs/hr)		(lbs/hr)	
	1		937		2459		266		0.23
	2		1042		2459		279		0.19
	3		1145		2459		293		0.21
Average	:				2459		279		0.21

#### #2 Dryer Vent - 6/24/21

			Reel		TRS	
			Speed	Steam Usage	Emission	าร
Run#		Start Time	•	(10 <sup>3</sup> lbs/hr)	(lbs/hr)	13
	1	1310	2459	297	,	0.19
	2	1416	2459	310	)	0.17
	3	1522	2461	296	5	0.16
Average:			2460	303	L	0.18

#### #1 Dryer Vent - 6/25/21

Run#		Start Time	Reel Speed (FPM)	Steam Usage (10 <sup>3</sup> lbs/hr)	TRS Emissions (lbs/hr)
	1	755	2651	294	0.08
	2	900	2651	306	0.09
	3	1005	2651	315	0.10
Average	:		2651	305	0.09

#### #4 Dryer Vent - 6/25/21

			Reel Speed	Steam Usage	TRS Emissions
Run#		Start Time	(FPM)	(10 <sup>3</sup> lbs/hr)	(lbs/hr)
	1	1135	2651	331	0.10
	2	1240	2628	328	0.10
	3	1345	2615	328	0.11
Average	e:		2631	329	0.10



#### No. 2 AND 3 SMELT DISSOLVING TANK VENTS

#### #6 Dryer Vent - 6/25/21

			Reel		TRS
			Speed	Steam Usage	Emissions
Run#		Start Time	(FPM)	(10 <sup>3</sup> lbs/hr)	(lbs/hr)
	1	1555	2583	319	0.13
	2	1715	2574	314	0.13
	3	1820	2584	309	0.13
Average	<u>:</u>		2580	314	0.13

#### #7 Dryer Vent - 6/26/21

			Reel			TRS
			Speed	Steam Usage		Emissions
Run#		Start Time	(FPM)	(10 <sup>3</sup> lbs/hr)		(lbs/hr)
	1	945	2550	3	06	0.14
	2	1050	2593	3	13	0.15
	3	1155	2641	3	26	0.18
Average:			2595	3	15	0.16

#### #8 Dryer Vent - 6/26/21

			Reel		TRS	
			Speed	Steam Usage	Emissio	ns
Run #		Start Time	(FPM)	(10 <sup>3</sup> lbs/hr)	(lbs/hr)	
	1	1315	2652	328	3	0.20
	2	1420	2664	338	3	0.18
	3	1524	2691	322	2	0.19
Average:			2669	329	9	0.19

#### Smelt Dissolving Tank Vent Testing

Smelt Dissolving Tank Vent - 6/27/21

				SMEL	T DISSOLVING TA	NK VENT				RB #2				RB #3				
			Scru	bber														
			Pum	р														
			Disc	harge	Weak Wash		Differentia	al										
			Pres	sure	Spray Flow	Weak Wash	Pressure	("	Liquor Firing				Liquor Firing				TRS Emis	sions
Run#		Start Tir	ne (PSI	G)	(gpm)	Flow (gpm)	Water)		Rate (gpm)	Solids %		Lbs/Hr BLS	Rate (gpm)	Solids %	Lbs/Hr BLS	Tons LBS/hr	(lbs/hr)	
	1	11	00	55.9	93.3	91.6		4.8	201.7	7	70.3	92950	314.8	69.0		117.7		1.02
	2	12	22	55.9	93.7	90.2		4.8	205.8	7	70.4	94974	315.5	69.0	142704	118.8		1.28
	3	13	44	55.9	93.7	90.6		4.7	199.1	7	70.4	91882	315.5	69.1	142911	117.4		1.10
Average	:			55.9	93.6	90.8		4.8	202.2	7	70.4	93269	315.3	69.0	142668	118.0		1.13



#### No. 1 Combination Boiler

					9	61	0.0		7.							2	7	9	4
		TRS	Emissions	(lbs/hr)	0.56	0.49	0.50		3				TRS	Emissions	(lbs/hr)	0.43	0.42	0.46	0.44
			SO <sub>2</sub> Emissions	(lbs/ODT Pulp)	5.29	6.71	7.15	0.40	9				1			5.46	90'9	5.69	5.74
				(lbs/hr)	262.7	362.5	457.4	0 000	6.005					Pulp Production SO <sub>2</sub> Emissions SO <sub>2</sub> Emissions	(lbs/hr) (lb	404.4	452.9	450.8	436.1
			Pulp Production SO <sub>2</sub> Emissions	(ODT/Hr)	49.7	54.0	64.0	0 11	6.55					Pulp Production S	(ODT/Hr) (	74.1	74.7	79.2	76.0
		HVLC Flow to	Boilers	(SCFM)	11575	11048	11009	11311	11211				HVLC Flow to	Boilers	(SCFM)	10515	10377	10573	10488
		LVHC Flow to SOG Flow to HVLC Flow to	Boilers	(SCFM)	621	1219	1136	000	766				LVHC Flow to SOG Flow to HVLC Flow to	Boilers	(SCFM)				
		LVHC Flow to	Boilers	(SCFM)	1585	1595	1578	1596					LVHC Flow to	Boilers	(SCFM)	1587	1593	1570	1583
	Hard Pipe	Foul	Condensate	Flow (GPM) Flow (GPM)	146	152	45	137	1			Hard Pipe	Foul	Condensate	Flow (GPM)	123	184	152	153
		Stripper Foul	Condensate		458	491	491	080					Stripper Foul	Scrubber pH Condensate	Flow (GPM)	489	491	490	490
		NCG	Scrubber pH	(ns)	10.9	10.9	10.9	10.9					NCG	Scrubber pH	(ns)	10.9	10.9	10.9	10.9
	NCG	Scrubber	Flow	(GPM)	40	40	40	ΨV	?			NCG	Scrubber	Flow	(GPM)	40	40	40	40
				TDF (TPH)	1.37	1.37	1.37	1 37							TDF (TPH)	1.37	1.37	1.37	1.37
			Bark Rate Gas Flow (10 <sup>3</sup>	SCF/Hr)	80.8	68.8	81.2	76 9						Bark Rate Gas Flow (10 <sup>3</sup>	SCF/Hr)	94.9	97.5	92.4	94.9
			Bark Rate	(Tons/Hr)	25.1	29.3	24.8	26.4	5					ark Rate	Tons/Hr)	26.3	23.7	25.2	25.1
Condition 1: With NCGs, with SOGs 23-Jun-21			Steam Rate	Run # Start Time (10 <sup>3</sup> lbs/hr) (Tons/Hr) SCF/Hr) TDF (TPH)	208	225	207	213		Condition 2: With NCGs, without SOGs				Steam Rate B	Start Time (10 <sup>3</sup> lbs/hr) (Tons/Hr) SCF/Hr)	230	216	220	222
: With NCGs				Start Time	1158	1400	1541			: With NCGs					Start Time (	1824	2019	2202	
Condition 1 23-Jun-21				Run #	1	2	6	Average.		Condition 2	23-Jun-21				Run #	1	2	n	Average:

Combination Boiler #1





#### No. 2 Combination Boiler

Condition 1: With NCGs, with SOGs	ss, with SOGs															
24-Jun-21					NCG			Hard Pipe								
					Scrubber	NCG	Stripper Foul	Foul	LVHC Flow to	.VHC Flow to SOG Flow to	HVLC Flow to				TRS	
	Steam Rate	Bark Rate	Bark Rate Gas Flow (10 <sup>3</sup>		Flow	Hd	Condensate	Condensate	Boilers	Boilers	Boilers	Pulp Production SO, Emissions	SO, Emissions	SO, Emissions	Emissions	
Run # Start Time (10 <sup>3</sup> lbs/hr)	(10 <sup>3</sup> lbs/hr)	(Tons/Hr)	SCF/Hr)	TDF (TPH)	(GPM)	(sn)	Flow (GPM)	Flow (GPM)	(SCFM)	(SCFM)	(SCFM)	(ODT/Hr)	(lbs/hr)	(lbs/ODT Pulp)	(lbs/hr)	
1 1445	219	39.0	125.3	1.37	40		491	190	1572	1231	10253	87.8	508.7	5.79	0.77	
2 1630	224	31.1	146.4	1.37	40		490	186	1576	1231	10277	88.6	507.2	5.72	0.63	
3 1806	241	33.6	146.4	1.37	40		490	190	1580	1231	10300	88.6	496.1	5.60	0.63	
Average:	228	34.6	139.4	1.37	40	10.9	490	189	1576	1231	10277	88.3	504.0	5.71	0.68	
Condition 2: With NCGs, without SOGs	is, without SOGs															
25-Jun-21																
					NCG			Hard Pipe								
					Scrubber	NCG	Stripper Foul	Foul	LVHC Flow to	LVHC Flow to SOG Flow to	HVLC Flow to				TRS	
	Steam Rate	Bark Rate (	Gas Flow (10 <sup>3</sup>		Flow	PH		Condensate	Boilers	Boilers	Boilers	Pulp Production	SO <sub>2</sub> Emissions	SO, Emissions	Emissions	
Run # Start Time	Start Time (10 <sup>3</sup> lbs/hr)	(Tons/Hr)	SCF/Hr)	TDF (TPH)	(GPM)			Flow (GPM)	(SCFM)	(SCFM)	(SCFM)		(lbs/hr)		(lbs/hr)	
1 1000	234	35.7	132.7	1.37	40			155	1579	Salar Dank		87.2	383.2		0.86	
2 1135	225	30.8	147.8	1.37	40	10.9	479	252	1573			84.3	380.0	4.51	0.82	
3 1315	245	30.6	141.7	1.37	40	10.9	482	26	1571			84.2	366.2	4.35	0.63	
Average:	235	32.4	140.7	1.37	40	10.9	481	168	1574		10467	85.2	376.4	4.42	0.77	

Combination Boiler #2

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